

inCider



Apple II / Macintosh

AN IDG
COMMUNICATIONS
PUBLICATION
April 1992

**APPLE II
REPORT**

**TEN NEW PRODUCTS
REVIEWED**

USA \$3.95
Canada \$4.95

NEW SECTION, P. 27

PRINTERS

How to Pick The Right Type

**WHERE'S THE
OZONE GONE?**
*Can Software Help
Save the Planet?*

REVIEWS

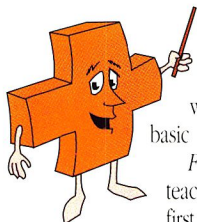
- **PGA Tour Golf**
- **oids**
- **Total Control 2.0**
- **Super Solvers
Outnumbered**



New for the Apple II from QUALITY COMPUTERS



Does your child know how to react in an emergency?

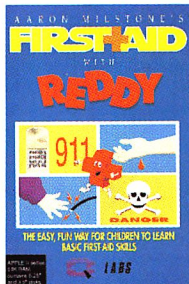


As a parent or teacher you try to equip your child to handle whatever life throws at them. There's so much out there that can hurt them. That's why children, even young children, should know basic first-aid.

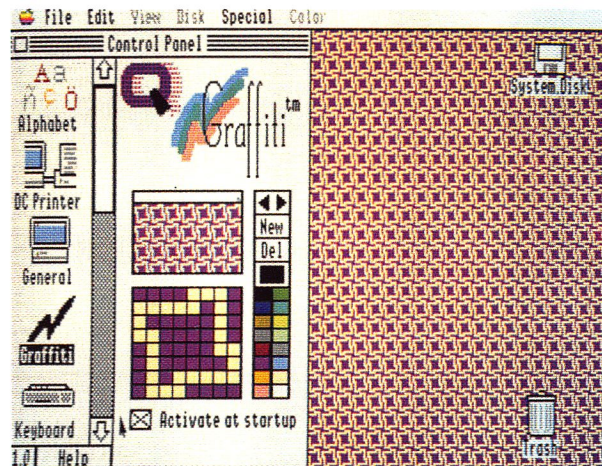
First-Aid with Reddy is the only computer program that teaches basic first-aid techniques to children as young as first grade. Your child will be captivated by the colorful animation and cheery sound as Reddy demonstrates proper techniques of treating burns, poison, shock, broken bones, bites, bleeding, and more.

The lessons are simple, and easy enough for a child to practice and use with confidence. Your child will learn how to determine treatment, how to keep a victim calm, how and where to get help, how to dial 9-1-1, as well as treatments for specific injuries.

Give your children the tools to act in an emergency — with confidence. Get *First-Aid with Reddy*.



First-Aid with Reddy.....\$29.95



Make your IIGs anything you want it to be

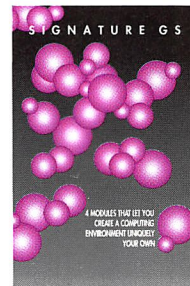
Is your IIGS just plain vanilla? Now you can make it a custom ride — with *Signature GS*. Q Lab's set of C-Devs that will soup up your Apple IIGS. *Signature GS* lets you create a computing environment that is uniquely your own. With *Signature GS* you get:

PHANTASM — A utility that prolongs screen life — and looks good doing it. When your screen has been still too long, it can become damaged. Phantasm prevents damage by automatically giving your screen something to do. A variety of fun, attractive screen activities are available, plus you can tell Phantasm when to come on.

GRAFFITI — There's nothing wrong with the IIGS desktop — except it's boring. Graffiti gives you a variety of colorful desktop patterns to choose from — or you can create your own.

SONICS — The "S" in IIGS stands for sound. Sonics lets you customize your IIGS sounds, and assign special sounds for specific functions. And these aren't just beeps — they're fun and entertaining. Add sounds to Insert/Eject Disk, Dialog Boxes, etc.

BOOTMASTER — Changing the configuration of all your IIGS's drivers, and system elements can be a pain. But BOOTMASTER makes it easy by putting the controls for all your IIGS's drivers, CDAs and NDAs on one master control panel. You turn them on and off at will — and change your selections easily.



Signature GS.....\$29.95



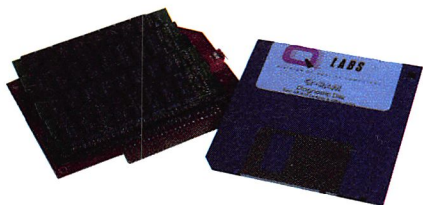
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The Q-RAM GS



When we could no longer find reliable, affordable hard drives, we made our own—the Q Drive. The Q Drive made Apples faster and easier to use. In fact, it was such a success that we had to wonder why we'd waited so long. Now we've done it again.

Introducing the Q-RAM GS memory card.

The Q-RAM GS is an economical way to add up to 4 MEG of memory to your Apple IIs. It's fully compatible with all Apple IIs hardware and software—including the IIs RAM Disk and DMA peripherals like the Apple II High Speed SCSI Card. And it's so small that it fits in your shirt pocket.

When you install the Q-RAM GS life becomes just a little easier. Programs load completely into memory at startup, eliminating disk swapping. Out-of-memory error messages disappear. You'll have memory to spare—memory to load desk accessories, or to set up a convenient RAM disk.

Installation is simple. You can expand a Q-RAM GS by snapping in standard SIMMs—we even include the necessary diagnostic software for your peace of mind. And since the Q-RAM GS uses SIMMs, your memory investment won't go to waste.

Of course, since you're dealing with Quality Computers, you get an unconditional 30-day money-back guarantee and a five-year warranty. And the price is the best news of all—a 2 MEG Q-RAM GS costs about the same or even less than other IIs memory cards in a 1 MEG configuration!

CAPACITY	PRICE
1 MEG	99.95
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4 MEG	239.95
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The Q DRIVE



Thousands of drives later, experts still are praising the Q Drive for its performance and value. *inCider/A+* gave it a four-and-a-half-star rating. Our customers are using words like "amazing" and "fantastic" to describe the way the Q Drive has changed their computing.

The Q Drive features a fast, reliable Conner mechanism using the latest technology, including auto-parking heads, a voice-coil actuator, and a track buffer. And since the Q Drive uses the industry-standard SCSI interface, you get complete compatibility with your current computer system—and your next, whether it's an Apple II, Macintosh, or IBM.

The Q Drive's plain-English manual covers more than installation and setup. It even tells you how to manage your mass storage effectively. From GS/OS and ProDOS to backups and maintenance, it's all there, including a glossary of hard drive jargon. And no hard drive is easier to set up and use—install a card, connect two cables, and turn on the power. The Q Drive automatically configures itself to match your computer, and the latest system software is already installed.

And remember, you're dealing with Quality Computers, the hard drive leader. The Q Drive comes with a 30-day money-back guarantee and a one-year limited warranty. If you run into a snag, our technical support staff is available for the cost of a phone call. A great drive and great support, at a great price—that's the Q Drive. Find out why it's the best Apple hard drive value—test drive one today!

CAPACITY	w/o Apple SCSI	w/Apple SCSI
40 MEG	389.95	499.95
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Applied Engineering	1 meg	2 meg	4 meg	6 meg
GS-RAM III	\$ 145	\$ 195	\$ 285	
GS-RAM Plus	\$ 179	\$ 229	\$ 309	\$ 399

Harris Labs GS-Sauce \$ 119 \$ 174 \$ 229

Sequential Systems RAM/GS \$ 129 \$ 189 3 meg
CV-Tech GS memory \$ 89 \$ 139 \$ 229 \$ 189

NOTE: You can piggyback your existing 1 mb or any 4 mb board with the CV-Tech board for up to 8 mb total! Save your investment in Apple memory!
All GS memory boards are 100% DMA compatible. All RAM boards made in the USA!

Apple IIe/IIc/IIc+

SEQUENTIAL SYSTEMS	256K	512K	1meg
RAM IIe	\$ 79	\$ 95	\$ 109
RAM IIc	\$ 99	\$ 124	\$ 139
Apple IIe 80 col./128K	\$ 19		

64K Imagerwriter Buffer \$ 59
Speed up your Appleworks printing!

Æ RamWorks III (IIe)	\$ 129	\$ 147	\$ 175
Æ Z-RAM Ultra II (IIc)	\$ 189	\$ 209	\$ 239
Æ RamExpress II (IIc+)	\$ 159	\$ 179	\$ 209

Memory Expansion kits for various cards & systems

1 meg 80ns GS-RAM III	\$ 59	Special ZIP package DRAM for GS-RAM III only
1 meg, 80ns set (8)	\$ 45	GS-RAM Plus, Apricorn, GS-Juice, Chinook RAM 4000,
1 meg 80ns SIMMs	\$ 45	For Macintosh, GS-Sauce, OctoRAM and SIMM boards
256Kx4 100ns set (2)	\$ 12	GS-RAM Ultra, RAMExpress II and RamPak 40s
256K 100ns set (8)	\$ 16	Apple memory, Z-RAMs, RamWorks, Super Expander

NOTE: All memory expansion kits are covered by a **5 year No-Hassle replacement guarantee**. If a memory kit should fail within this period, LRO will replace it at no charge to you. The memory products are guaranteed to work with all Apple IIs, Lasers, and Macs (using the correct expansion card/slots). Free jumpers available upon request, as some boards require them.

3.5" & 5.25" DISK DRIVES

Æ 3.5" 800K (GS/IIc+/IIe/Mac)	\$ 187	
Æ 3.5" 1.44 (GS/IIc+/IIe/Mac)	\$ 229	Æ 3.5" 1.6mb GS \$ 235
Æ 5.25" Disk Drive (Apple II/LC)	\$ 149	Daisy Chainable 5.25" \$ 99
Universal Disc Controller (UDC)	\$ 49	AMR 5.25" Drive \$ 129
Dual 3.5" + 5.25"	\$ 279	Dual 5.25" \$ 289

*NOTE: The AE 3.5" 1.44mb drive will operate only as an 800K drive on Apple II series computers until apple releases the new Apple II SuperDrive interface board.

MODEMS

ZOOM 2400 bps external, 7 yrs warranty	\$ 89
Æ Datalink LC w/SendFAX	\$ 219
Æ Datalink 2400	\$ 169
Proterm v3.0 \$ 79	Æ ReadyLink \$ 69

PRINTERS

Apple Imagerwriter II color printer (32K buffer)	\$ 459	Stylewriter	\$ 449
Hewlett Packard Deskjet 500	\$ 499	hp Ink cartridge	\$ 17
Panasonic 1191 9-pin dot-matrix	\$ 199		
Panasonic 1123 24-pin dot-matrix	\$ 249		
Super Serial Interface II+/IIe	\$ 55		
Æ Serial Pro Multifunction card (serial, clock)	\$ 89	Æ Parallel Pro	\$ 69

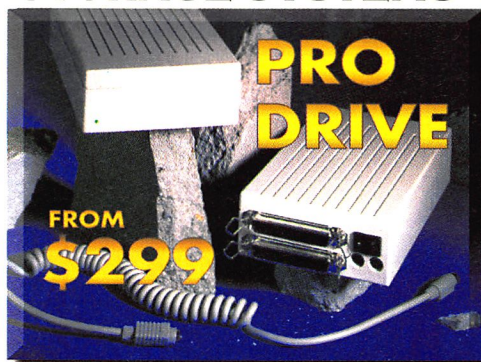
PC-TRANSPORTER

Æ PC-Transporter	\$ 229		
PCT 8087-2 Math coprocessor	\$ 99		
Æ PCT GS kit	\$ 35	Æ PCT IIe kit	\$ 29
Æ Transdrive 5.25"	\$ 181	Dual 5.25"	\$ 279
3.5" Transdrive add-on	\$ 89	Dual 5.25"+3.5"	\$ 279

SOFTWARE

Apple - GS/OS v6.0	\$CALL\$	HyperCard GS	\$ 79
Electronic Arts-Mavis Beacon Teaches Typing			\$ 31
MCX - HoverBlade GS	\$ 29		
ORCA - ORCA/C Learning package	\$ 119		
Roger Wagner - HyperStudio 3.0 GS w/digitizer			\$ 103
Spring Branch - GS Numerics	\$ 89	Mac Numerics	\$ 139
SSSi - Genesys GS resource editor	\$ 79		

STORAGE SYSTEMS



New Concepts - We Were the First & We're the Best!

We were first in bringing the smallest & lowest priced hard drive (same size as your 3.5" floppy) to the Apple II market, and we continue our commitment to you with the Best drives for Less! We use the reliable **CONNER** and **QUANTUM** VCA mechanisms with on-board caching for the best performance. As if that weren't enough, you get more - a whopping 32 megabytes of free software (including the latest System software).

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NCS Pro 520Q	\$ 299	NCS Pro 100	\$ 425
NCS Pro 80	\$ 385	NCS Pro 120	\$ 459
NCS Pro 1050Q	\$ 435	NCS Pro 200	\$ 669

All SCSI drives come complete with all cables.

Æ Vulcan Gold 40 internal drive	\$ 579
Æ Vulcan Gold upgrade for Vulcan 40 & 100	\$ 46

50% faster on reads, up to 900% faster on writes

Call for Information on Sequential Systems' Hard Drives for the Apple IIc

NC-660 CD-ROM drive (350ms)	\$ 549
NC-45 Removable (Syquest 20ms)	\$ 489
NC-88 Removable (Syquest 20ms)	\$ 989
Apple II High Speed SCSI card	\$ 99

CV Technologies RAMFast

RAMFast GS v2.01E w/256K cache	\$ 165
RAMFast GS v2.01E w/1MB cache	\$ 229
RAMFast rev. C w/256K LIMITED AVAILABILITY	\$ 99

ACCELERATORS

Applied Engineering

TransWarp GS 32K cache	\$ 285
TransWarp GS 8K cache	\$ 217
TransWarp GS 32K upgrade	\$ 79
TransWarp Classic for IIe, II+	\$ 89

ZIP Technology

ZIP GSX 9 MHz/32K cache	\$ 239
ZIP GSX 9 MHz/16K cache	\$ 215
ZIP GSX 8 MHz/16K cache	\$ 175
ZIP GSX 7 MHz/8K cache	\$ 147
ZIP 8000 8 MHz for IIe, IIc, II+	\$ 139

COMPUTERS & ACCESSORIES

Apple IIGS ROM 3 w/1Mb, kbd, mouse	\$ 779
Macintosh LC 4/40	\$ 1,549
Æ Conserver GS (Fan/surge suppressor/disk holder)	\$ 72
Kensington ADB Trackball	\$ 119
Keytronics ADB Extended Keyboard	\$ 139
Mouse Systems optical mouse ADB	\$ 79
Apple IIGS 7 Amp replacement power supply	\$ 69
Apple IIe 7 Amp replacement power supply	\$ 54
Æ Mac LC replacement power supply	\$ 99
Apple IIGS/Mac standard keyboard	\$ 104

DIGITIZERS

Visionary-GS real-time video digitizer	\$ 279
Quickie hand scanner by Vitesse	\$ 195
Quickie w/WestCode InWords OCR	\$ 266
Æ Audio Animator stereo digitizer (MIDI) stereo-output	\$ 165
Æ Sonic Blaster GS stereo digitizer stereo-output	\$ 89

Vitesse - Salvation Supreme \$ 89

WestCode

InWords GS OCR for Quickie & LightningScan \$ 77

→ **Pointless GS TrueType interpreter for GS\$ 49** ←

TimeWorks

Publish It! 4 (Apple II)	\$ 89	Publish It! Easy 2 (Mac)	\$ 109
Publish It! 3 Special! (free upgrade to Publish It! 4)	\$ 37		



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ARTICLES

- 32 Words into Print** by Gregg Keizer
Despite what mother told you, looks *do* count — especially when it comes to computer-generated documents. Fortunately, Apple II and Mac users have a range of printer options to choose from. Three basic technologies — dot-matrix, ink-jet, laser — offer a range of capabilities and type qualities. Check out the output, compare prices: Regardless of the computer model you own or the budget you keep, there's a machine out there that will help you dress your hardcopy for success.
- 38 Good Earthkeeping** by Cynthia E. Field, Ph.D.
Celebrate the spirit of Earth Day '92 with a host of entertaining environmental-education products for your Apple II or Mac. You don't need an advanced degree in rainforest biology to introduce ecological concepts into your home or classroom: Kids and adults alike will discover that learning to care for our planet's health can be an upbeat, interactive experience — and lots of fun besides.



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COLUMNS

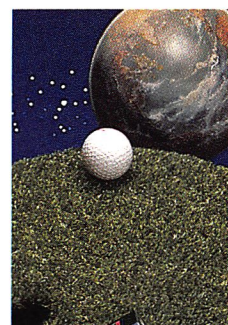
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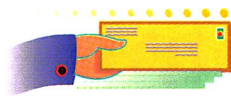
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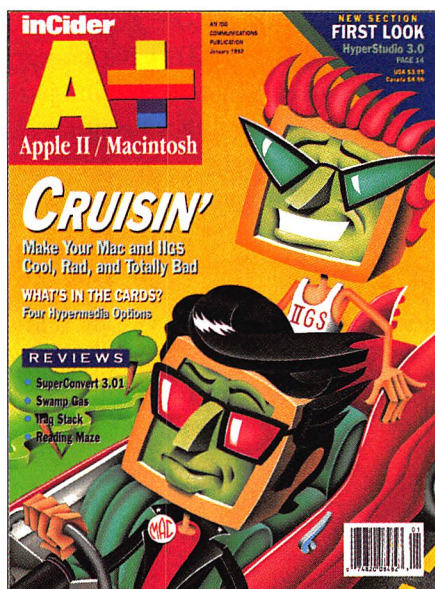
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LETTERS



THE SHORTEST DISTANCE

I ENJOYED YOUR JANUARY 1992 article "The Unknown Parameter" (Hints, p. 66). But why use the codes you listed in the accompanying table? They're difficult to memorize — especially for a 70-year-old like me. Try CAT,TTXT for text files, CAT,TSYS for system files, CAT,TBIN for binary files, and so on. This alternative also works for AppleWorks files.

George T. Milonas

Lt. Colonel, USAF (Ret.)

**8130-H Bridgeport Way Southwest
Tacoma, WA 98499-2618**

*Well, sure, if you want to do it the easy way.
Thanks for the tip.* — eds.

APPLE II INTERNATIONAL

I WANT TO APPLAUD DAN MUSE for his September 1991 column about the lack of computers in the field of education ("Reality Check," *inCider's View*, p. 8). Here in Brazil, we have the same problems, at times made worse by local circumstances.

People are beginning to get interested in computers and to ask intelligent questions about what computers are being used to do. Both young and old are also becoming less afraid of computers. We have many people like this here in Brazil, but they're held back by a variety of obstacles.

There's a movement to promote the obsolescence of computers such as the Apple II in favor of expensive IBM-style computers. In addition, we're forbidden to import hardware or software. The government instituted this policy to "protect an incipient Brazilian industry," establishing a "Brazilian market reserve," which produces only expensive 16-bit equipment, keeping away more and more people interested in learning the technology. People don't have enough money to spend on these things — they have other priorities in their lives.

Apple lovers have to buy secondhand equipment, or if a friend travels to the United States, have that person buy for us to escape 100-percent taxes. Through magazines like yours, we know of many enhancements, but it's very difficult to get them. It's like a glass barrier between a child and a huge ice-cream cone! We struggle to maintain our IIe equipment, but software and hardware prices are so high, and we make even less money than you probably do.

Nevertheless, there are small Apple cells all over the country, with the strongest located in Rio. Owing to the circumstances I've related, almost all our software is illegal. We're forced to resort to software pirates; without them, I couldn't write [word-process] this letter. Fortunately for our struggle, the government recently decided to liberate our Apple computers in everyday work with the help of our great American friends AppleWorks 3.0, Side-ways, Copy II Plus 9.0, Locksmith 6.0, Multi-Scribe, Print Magic Master, and others.

I'm 59, an architect and head of the planning division of INOCOOP-RIO, a private institute for cooperative housing in Rio de Janeiro. Everything on computer here is under my supervision. I didn't study computers in any school; everything I know I've learned from books and nightly study. My task will now be easier, thanks to your magazine.

Flavio Alberto de Sousa Reis

Pca. Jose Ribeiro 6/301

20540 Rio de Janeiro

Brazil

EXTRA HELP

I'M A COLLEGE STUDENT IN Virginia, and I own an Apple IIGs. I'm taking a calculus course currently. Do you know of any products on the market, either public domain or commercial, that will graph equations in two and three dimensions on the GS?

Christopher M. Hayes

280 Sunset Drive

Mechanicsville, VA 23111-1902

I'M A HIGH-SCHOOL STUDENT enrolled in calculus. I'm looking for programs that could help me through the course. Is there anything available for the Apple IIGs?

Thomas Lay

5532 Oakley Terrace

Irvine, CA 92715

Check out our November 1990 review of GSNumerics, from Spring Branch Software (p. 24). The company is located at P.O. Box 342, Manchester, IA 52057, (319) 927-6437. You might also find a new program called GSymbolix, by Henrik Gudat, helpful. You can order it either directly from Bright Software at P.O. Box 18, 4153 Reinach 2, Switzerland, for \$119 plus postage, or from the distributor, MusiComp, Bottmingerstrasse 1,



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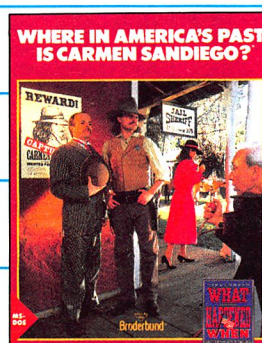
\$64⁹⁵ each **MAC**

\$189.95 for all three!



\$29⁹⁵ **APL**

\$35.95 IBM
School Version
\$41.99 APL / \$47.99 IBM



\$29⁹⁵ **APL/IBM**

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CD-ROM

RIBBONS/DISKS/PAPER

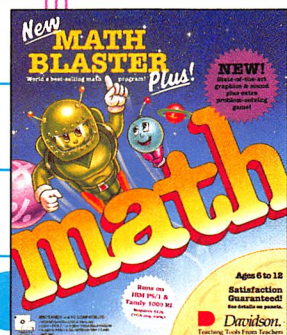
ImageWriter I & II*	\$ 2.50
ImageWriter II 4-color	4.95
ImageWriter II 4-color Heat Transfer	14.95
* For quantities less than 6 or for color - add \$1.00 each	
Disks - Multiples of 50	
5.25" DS/DD disks.. 35¢ 3.5" DS/DD disks.. 69¢	
Disks - Colored 10 Pack Assortment	
5.25" color disks \$6.95 3.5" color disks \$14.50	
Colored Paper - 250 Sheet Assortment	\$10.95

EXTRAS

ComputerEyes, Color Ilcs	\$ 194.95
PC Viewer 480S	895.95
PC Viewer 1600LC Color	1895.95
Vulcan 40 meg Hard Drive APL/Ilcs	649.95
Quickie Hand Scanner APL/Ilcs	194.95
InWords (for use w/ Quickie)	79.95
II Easy RAM 64K Memory Upgrade	18.95
Laser 128 Color System	489.95
Laser 128 w/ Monochrome Monitor	349.95
Supra 2400 External Modem	97.95
Supra 2400 Modem w/Microphone software & cable	139.95
105 mb Quantum SCSI Hard Drive	477.95

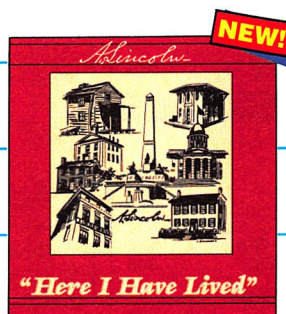
CD-ROM/LASERDISCS

Desert Storm	CD	\$34.95
Cosmic Osmo	CD	59.95
Scary Poems for Rotten Kids	CD	69.95
Regard for the Planet	LD	62.95
For All Mankind	LD	99.95
Bio Sci II	LD	492.95
AIDS	LD	493.95
NEC Intersect CDR-37 CD-ROM Player		475.95
Pioneer LaserDisc LD-V2200 Player		699.95



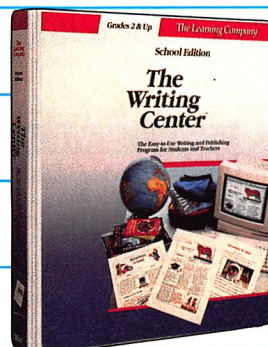
\$29⁹⁵ **APL/Ilcs/IBM**

School Version \$41.95
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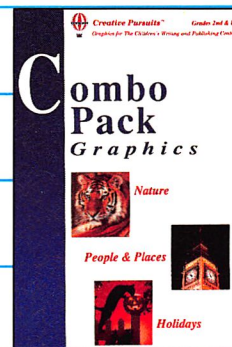
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4102 Binningen, Switzerland, for \$139 plus postage. MusiComp's phone number is CH-061/47 05 06; fax is CH-061/47 05 25.
— eds.

FILLING IN

YOUR "YEAR IN REVIEW" ARTICLE (December 1991, p. 42) was much needed and appreciated, but a few gaps remain to be filled. FrankSoft Publishing released eight AppleWorks-based spreadsheet and database programs during 1991. Our flagship product, **Asset Analysis**, even received an excellent review in your March 1991 issue ("A New Approach to Personal Finance," p. 66). Keep up the good work.

Frank J. Forlini, Jr., M.D.

FrankSoft Publishing
3300 33rd Avenue Court
Rock Island, IL 61201

LASER PC-4 CLUB

I'M INTERESTED IN HEARING from anyone who owns a PC-4 portable computer from Laser Computer. I publish a free newsletter devoted to the PC-4 system. It's not a commercial enterprise — I'm just an owner who wants to get an exchange of information flowing about this unique and practical machine.

Dennis A. Church
1102 Ridge
Collinsville, IL 62234

INCIDER/A+ WELCOMES READERS' COMMENTS. WE RESERVE THE RIGHT TO EDIT FOR CLARITY, STYLE, AND LENGTH. ADDRESS YOUR CORRESPONDENCE TO LETTERS, *INCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458.

CORRECTIONS

Owing to a printing error, we inadvertently omitted the final command in February's Apple Clinic program listing (p. 21). Please add the following line:

230 RETURN

In February's AppleWorks in Action column, **@MAX** should replace **@MIN** in Formula 19, cell K20 (p. 50). On p. 51, the second line of Formula 27 (cell I52) should read **@SUM(B4.B16.B18) -B31.O**.

STORY TIME

Now's the time to buy a CD player — a CD-ROM player, that is. CD-ROM products are hot. Last year player prices fell from \$1000 to less than \$500; even the expensive AppleCD SC Plus now retails for \$800. NEC's CDC36 costs as little as \$400. Prices should continue to fall.

CDs are for baseball fans, poets, photographers, amateur detectives, but the best discs are for kids. Broderbund's famous sleuth stars in a deluxe version of **Where in the World Is Carmen Sandiego?**, for example. Instead of graphics, Carmen Deluxe displays digitized photos of the seven seas and continents. Forget the competitive aspect of the game; browsing's as much fun as leafing through old *National Geographics* — in fact, that's where Broderbund bought the pictures.

The Creative Multimedia Corporation is known for grownup CDs that offer family medical advice and baseball statistics; now CMC has convinced R.A. Montgomery, creator of the best-selling *Choose Your Own Adventure* book series for young adults (Bantam Books), to fashion a multimedia adventure. The **Taran Trilogy**, named for the planet on the borders of deep space that you have to save, is a series of compact discs that begins with **Beyond the Wall of Stars** (\$79.95). You might expect a celebrated author's work to feature solid prose, and it does, but the look is also striking — a collage of animated computer graphics, text, and digitized photographs.

Some of the first discs for early readers came from Discis Knowledge Research of Toronto, a company that began shipping

Talking Books more than a year ago. The Discis catalog lists dozens of products. This spring, expect discs that appeal to a slightly older audience: K through 12. **Aesop's Fables** and **The Night Before Christmas** (\$79.95 each) are two CDs for all ages.

Voyager's **Amanda Stories** (\$59.95) have



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BASEBALL
FANS, POETS,
PHOTOGRAPHERS,
AMATEUR
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AND KIDS
OF ALL AGES."

outgrown HyperCard and are now on CD in full color and sound. A new disc called **A Silly Noisy House** (\$59.95), which Voyager calls an "audiovisual playground," is subtitled "Why you must never leave a child home alone." It's a lighthearted tour for toddlers, complete with singing and dancing teddy bears.

Voyager also has some great discs for grownups. Pedro Meyer's **I Photograph to**

Remember (\$39.95) is a multimedia coffee-table book: 100 photos of the photographer's parents. Meyer narrates the story of the inevitable mortality of us all. **Baseball's Greatest Hits** (\$59.95) uses Apple's QuickTime "dynamic media" programming standard to replay 65 of baseball's greatest moments. Photos, stats, team histories, and a baseball timeline are some of the features in this HyperCard stack. But the game winner is QuickTime's full-motion video: You watch Hank Aaron hit his 715th homer and Don Larsen pitch his perfect World Series game. Announcers Mel Allen and Red Barber provide the commentary.

ICOM Simulations has expanded the Sherlock Holmes stories into three mysteries for you to solve. **Sherlock Holmes, Consulting Detective** (\$69.95) combines text with digitized video and voices. It doesn't use Apple's QuickTime; the video in particular is bigger and better than QuickTime's. You play the detective, chasing down leads in a marvelous re-creation of turn-of-the-century London. (If you prefer to let Holmes do the detecting and read all about it instead, CMC sells a disc for \$29.95 that contains the complete **Sherlock Holmes** canon, including Sidney Paget's illustrations.)

System costs for playing CD-ROMs tend to be high: You usually need 4 megabytes of RAM and a large video display. Make sure the disc will run on your machine before you buy. The manufacturer can also help you locate a dealership; it may not be your usual software store. Contact Voyager for a copy of its winter catalogue, which includes a good introduction to the ins and outs of CD-ROM. —P.S.

COMPANY INFORMATION

Broderbund Software
500 Redwood Boulevard
P.O. Box 6121
Novato, CA 94948-6121
(415) 382-4400

Creative Multimedia Company
7150 SW Hampton
Suite C-120
Portland, OR 97223
(503) 639-3395

DISCIS Knowledge Research
45 Shepard Avenue East
Suite 410
Toronto
Ontario M2N 5W9
Canada
(416) 250-6537

ICOM Simulations
648 South Wheeling Road
Wheeling, IL 60090
(708) 520-4440

The Voyager Company
1351 Pacific Coast Highway
Santa Monica, CA 90410
(310) 451-1383

"Apple II" indicates an 8-bit product compatible with IIs, IIsx, IIC Pluses, and IIGses unless noted otherwise.

NEW HARDWARE

VULCAN GOES GOLD

Your GS' Vulcan internal hard drive from Applied Engineering can now run up to nine times faster, thanks to the new **Gold Cache Upgrade**.

This inexpensive replacement chip/software package (only \$59) speeds up the reading of data from disk as much as 50 percent, and writing data as much 300 to 900 percent. Its unique "easy boot" feature lets you decide which partition of your hard drive to use by simply pressing the spacebar at startup. The enhanced chip gives you more efficient operation and is fully compatible with the latest GS operating system.

Contact Applied Engineering at 32310 Beltline, Suite 154, Dallas, TX 75234, (214) 241-6060, or circle number 350 on the Reader Service card for more information.

NEW RESOURCES

NEWSWORKS

The ClarisWorks Users Group (a.k.a. C•WUG) shipped the first issue of its new **ClarisWorks Journal** in February.

In the tradition of the AppleWorks Forum, the ClarisWorks Journal includes step-by-step, illustrated articles on topics such as how to print database labels, how to get started with graphics, how to format word-processor documents, and how to select fonts to produce an attractive visual impact in ClarisWorks documents.

ClarisWorks users can see a sample copy of the Journal for only \$3. An annual subscription is \$34 (ten issues), which includes membership in C•WUG. Members enjoy a free electronic bulletin-board service and have access to more than 100 megabytes of fonts, graphics, utilities, accessories, and templates. Call or write the ClarisWorks Users Group, P.O. Box 70, Plymouth, MI 48187, (313) 454-1969, or circle number 351 on the Reader Service card for more information.

▲ ♦ ■ WHY LOGO?

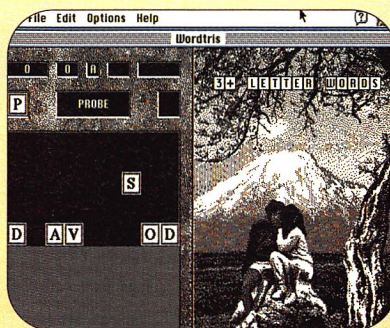
Terrapin Logo, in the inter-test of education, now offers a free booklet that answers the teacher's question, Why Use Logo? This 28-page pamphlet explains clearly what the Logo programming language is, why Logo is good for learning, and how teachers can use Logo to teach problem-solving and mathematical skills.

Why Use Logo? also contains a comprehensive directory of Logo resources, including books, articles, and periodicals, as well as a summary and bibliography of research results that could prove invaluable if you're faced with writing a grant proposal or a budget. Write or call Terrapin Software for a free copy, at 400 Riverside Street, Portland, ME 04103, (207) 878-8200, or circle number 352 on the Reader Service card for more information.

NEW SOFTWARE

▲ JUST SAY DA

Spectrum HoloByte, the company that brought you Tetris, Welltris, and Faces from



the former Soviet Union, has released **Wordtris**, its latest "falling blocks" game from Sergei Utkin and Vjacheslav Tsouy.

Wordtris requires both fast fingers and strategic thinking. As letter blocks fall, you have to manipulate them into words by combining them with others. Once you've written a word, it's removed. The goal is to create as many words as possible using as many letters as possible. Wordtris also features a slower-moving "children's game" and local-area-network and modem versions for competitive play. If the software's 60,000-term dictionary doesn't accept your favorite word-game words, you can add an extra 1000 to a custom list.

Wordtris sells for \$49.95 and runs on any Mac (color version requires 16-color video), from Spectrum HoloByte, 2061 Challenger Drive, Alameda, CA 94501, (510) 522-3584. Circle number 359 on the Reader Service card for more information.

▲ READ ALL ABOUT IT

CD-ROM isn't the only medium expanding into the area of literature. (See the accompanying news story, p. 14.) **Expanded Books**, new from Voyager, aren't CD-ROMs — most emphatically not. These "books on a disk" — 3.5-inch floppy disk, that is —

include full texts with illustrations and cross-references, and are designed for reading with Apple's new PowerBook portable computers (although they work fine with any Mac). **The Complete Annotated Alice**, **Jurassic Park**, and **The Complete Hitch Hiker's**

Guide to the Galaxy are the three current titles, priced at \$19.95 each. For more information, contact The Voyager Company at 1351 Pacific Coast Highway, Santa Monica, CA 90410, (310) 451-1383, or circle number 353 on the Reader Service card.

▲ SEA TO SHINING SEA

MacUSA, the latest offering from PC Globe, the company that brought you MacGlobe (First Look, February 1992, p. 18; Reviews, March 1992, p. 24), features instant profiles of all 50 states and Puerto Rico, with detailed maps, colorful graphics, and annually updated data. Bar charts and thematic maps let you compare information for various states instantly. You can also export the maps and graphics easily to other Mac programs.

MacUSA's maps show major state features, elevations, interstate highways, and the locations of major cities. You can see each state's flag and hear its song, too. A self-adjusting time-zone map, point-to-point distances, lists of tourist attractions, state histories, and demographic and political information are only some of the many features you'll find in this program.

At press time, MacUSA's price wasn't set. For more information, contact PC Globe, 4440 South Rural Road,

NEW-PRODUCT FOCUS

▲ MAC ◆ APPLE II ■ APPLE IIcs

Tempe, AZ 85282, (800) 255-2789, or circle number 354 on the Reader Service card.

DOUBLE NUMBERS

MacNumerics-II from Spring Branch Software is more than an upgrade to the original program; colorful graphing and interactive exploration of mathematical functions make difficult concepts visual and clear. The new "natural function entry" lets students or teachers enter data as it appears in standard textbooks, thereby increasing time spent on math and reducing time wasted learning a "programming language."

MacNumerics-II — designed for high schools, colleges, and universities — use a number of mathematical "tools," covering many of the topics you'd expect from a course in scientific, engineering, or business mathematics: conic sections, linear programming, matrices, polynomials, polar equations, and vectors, to name a few.

MacNumerics-II requires an 8-bit color Mac — such as an LC or IIsi — and a hard drive, and sells for \$289.95, from Spring Branch Software, P.O. Box 342, Manchester, IA 52057, (319) 927-6537. Circle number 355 on the Reader Service card for more information.

IN THE BOX

ShoeBox, new from Seven Hills Software, keeps track of a variety of household information so well you'll never need to search through paper files again. Preformatted categories include important phone numbers and addresses, personal information, vehicle data,

budgeting, and more. Because ShoeBox is a HyperCard IIgs application, it's easy to add new categories for other kinds of information, too. Don't worry if you don't already have HyperCard; it's included with ShoeBox, which still costs only \$59.95.

With its attractive graphics interface, ShoeBox is transforms your IIgs into an "information appliance"; you can leave it running all day and turn to it for data as you need it. ShoeBox gives new meaning to the phrase "home computer," providing a uniform useful environment from which to manage all your household and personal affairs.

Contact Seven Hills Software, 2310 Oxford Road, Tallahassee, FL 32304-9980, (904) 575-0566, or circle number 356 on the Reader Service card for more information.

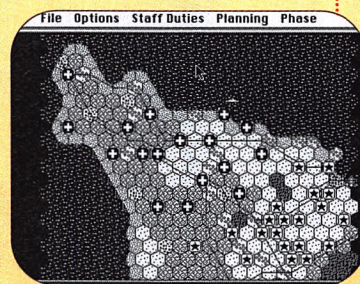
EXPLORATORY LEARNING

William K. Bradford's new **Explore-a-Story Plus** for the Mac LC combines the interactive story-reading and writing tradition of the Apple II version with new features and enhanced graphics, as well as a full-featured word processor.

Students read each tale on screen — Stone Soup, The Three Pigs, The Princess and the Pea, and Rosie the Counting Rabbit are the first four — and enter the storyline. They can animate the characters, rearrange the backgrounds, and even construct and print their own stories and books. Student "publishers" now have complete control over fonts, formats, and styles, thanks to the built-in word-processing program; it

even lets you include pictures in the printed book.

New to the **Explore-a-Science** series for the Apple II is **Weather Forecasting**, a



science and language-arts program for grades 5 through 8. William K. Bradford is also distributing a teacher-training video to help educators use its exploration software.

For information on Explore-a-Story products, contact William K. Bradford, 310 School Street, Acton, MA 01270, (508) 263-6996, or circle number 357 on the Reader Service card for more information.

VICTORY AT LC

Three-Sixty Pacific's **V for Victory: Utah Beach** thrusts you into the role of military strategist at World War II's Normandy invasion of 1944. As the American commander, you must overcome strong German resistance as you struggle to occupy the Cotentin peninsula and the vital port at Cherbourg. In another game, you're the German commander and need to drive the Allies back into the English Channel and defend Cherbourg.

V for Victory is a large and accurate simulation of a major ground campaign. It's tough, but the computer can come to your aid as a "staff assistant." You can control as much or as little of the action as you

choose, and leave the rest to the machine.

The easiest game takes an hour, but the Campaign Game asks you to devote about 60 hours. It's a game you can play again and again, on any Mac (above a Plus), in black-and-white as well as color. This first entry in the BattleSet series costs \$59.95, from Three-Sixty Pacific, 2105 South Bascom Drive, Suite 380, Campbell, CA 95008, (408) 879-9144.

Circle number 358 on the Reader Service card for more information.

MOTHER EARTH

In keeping with April's Earth Day theme, Scholastic Inc. has released **Interactive NOVA: Race to Save the Planet**, which is designed to inspire environmental awareness in students from grades 5 to 12.

The Race to Save the Planet multimedia software and video-disc program is Scholastic's third interactive product based on WGBH's television series NOVA. The other programs are **Animal Pathfinders** and **The Miracle of Life**.

The Race to Save the Planet requires a Macintosh with a hard disk, a videodisc player, color monitor, and an RS-232 cable. It combines full-motion video and still images from WGBH's ten-part Race to Save the Planet series.

For information, contact Inquiry Department, Scholastic Software Inc., P.O. Box 7502, 2931 East McCarty Street, Jefferson City, MO 65102, 800-541-5513, or circle number 360 on the Reader Service card.



MAKE THE SWITCH 2

Using Mac data on an Apple II, as we saw last month (March 1992, p. 15), can be a problem — unless you know where to turn for help. Fortunately, shareware solutions can lend a hand. Basically, it's a two-step process. In part 1, we covered transferring your Mac data to a ProDOS disk. This month, we'll tackle data conversion.

Some Mac files, such as digitized sound files, are immediately usable once you get them on a ProDOS disk. Just load them into a GS sound-editing utility, such as Paul James' freeware program **Sound Studio** or Ian Schmidt's \$10 shareware product **AudioZap**, and reset the playback rate.

Other file types you may have to process with Stephen Chick's \$15 GS shareware utility **Resource Spy**, which can extract Finder icons, fonts, and word-processing files, among others, and convert them to a form the GS understands. Although you can use extracted Mac Finder icons as GS Finder icons, you can spruce them up in Paul Elseth's \$15 shareware program **IconEd**. You might also group them into categories and use a graphics screen-saver freeware utility, such as Dale Taylor's **STS**, to turn that screenful of icons into super-hi-res clip art, ready to cut-and-paste into AppleWorks GS, HyperStudio, or HyperCard IIGs.

You'll need to run other files, such as MacPaint graphics, through Jason Harper's freeware utility **MacDown** to save them as standard hi-res graphics, or process them through Harper's **SuperConvert** or **The Graphics Exchange** to save them as super-hi-res GS files.

An Apple II can present graphics created on other computers if they're in *graphics-interchange format* (GIF). This format, developed by CompuServe, lets people with incompatible computers share graphics. Many GIF decoders — programs that display GIF graphics and let you save them in a variety of Apple II formats — are available. For the II, there's Harper's freeware product **IIGIF**. For the GS, there are, among others, Dave Leffler's freeware program **ShowPic NDA** and Jonah Stitch's

\$5 shareware utility **GIF Decoder**. These utilities offer you access to thousands of images not previously compatible with the II.

Where do you find all those images? On bulletin-board systems and on-line networks such as CompuServe and GENie. These files have been compressed to save you time and money. Of course, you can't download an IBM database manager or paint program and run it on your Apple II, but you may be able to use data files created by those programs, thanks to a number of Apple II utilities that let you decompress them.

For instance, Andy Nicholas offers versions of **ShrinkIt** for the II Plus, IIe/IIc, and GS. It lets you extract files compressed with any of the popular schemes, including the Mac's **StuffIt**, and **ARC** and **ZOO** for the IBM, Amiga, and Atari ST. If **ShrinkIt** doesn't work, **NuPakGS**, a \$15 shareware offering from Frontier Technologies, may help you open a Mac **StuffIt** file; **DeArc**, a \$10 shareware utility (IIe version by David Larsen, GS version by Tim Swihart), may let you extract an IBM or Amiga **ARC** file.

Tony Marquez's shareware terminal program **AGATE** (no set fee) includes a utility named **Pizza**, which extracts files from compressed MS-DOS ZIP storage format. You can download ZIPed word-processor files, for example, then run them through a file-type changer, such as the one provided with George Wilde's **Utility-WorksGS** (\$20 shareware) to convert them from unreadable binary files to ASCII text.

We've looked at a few of the ways your Apple II can use data created on an "incompatible" computer. They won't be 100-percent successful 100 percent of the time, but they'll increase your stock of high-quality files and open up a new world of public-domain words and pictures.

FOR A DISK CONTAINING THE SOFTWARE MENTIONED HERE, SEND \$5 (U.S. FUNDS ONLY) TO JOE KOHN, 166 ALPINE STREET, SAN RAFAEL, CA 94901. SPECIFY FORMAT (3.5- OR 5.25-INCH) AND MACHINE (IIe/IIc OR GS). FEE COVERS SHIPPING ONLY; YOU'RE STILL RESPONSIBLE FOR AUTHORS' SHAREWARE FEES.

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A-Hive Jr. -- small size

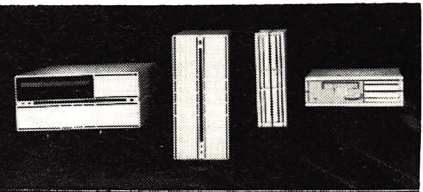
	7.1"x7.1"x2.2"
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Tape drive	155MB \$499

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Hard drive	340MB \$1409
Cartridge drive	44MB \$ 598
	88MB \$ 818

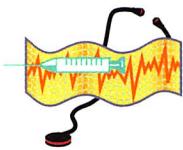
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APPLE CLINIC

LEAP FORWARD, FALL OUT

Here's a pound of cure for a ProDOS clock
that suddenly reads "1985."

BY CECIL FRETWELL

JUST IN TIME

I'VE PURCHASED A USED APPLE IIe system that, among other things, contains a ProClock clock card. When I try to use AppleWorks, the system insists that the year is 1985. Help!

Charles A. Stoffregen
New Glarus, WI

Don't panic — the problem's in ProDOS. Those of you around in 1986 will remember Apple's ProDOS Technical Note #23 with a wry grin. Some diligent soul realized that the table that ProDOS was using to figure out what day it was would run out in 1991. A minor brouhaha ensued, and the problem was documented and dismissed as trivial.

Amazing how long those damn Apple II's live, isn't it? Now we've reached 1992, and there are still legions of internal clocks alive and (wait for it . . .) ticking.

While the wheels of progress grind away at another official "Technical Note and Bug Fix," Apple's Developer Technical Support division has rushed into the breach with an unofficial patch that's being distributed as widely as possible on all major on-line services. The modemless among you should try your local user group or Apple II dealer — or stay tuned for next month's Clinic, when we'll print the patch in full. (GS users needn't worry about this particular quirk, by the way.)

BOOT IT UP REDUX

IN YOUR RESPONSE TO DANA Cole's letter ("Boot It Up," September 1991, p. 22), you wrote about making a

basic boot disk with no bells and whistles. When I put these folders and files on a GS/OS-initialized disk, it states, "Unable to load descriptors, error was \$0046," every time I try to boot this disk up. What does it mean?

Carl Skipper
Acton, MA

Matt Deatherage should shoot me for my response to Dana. What I presented was based on an old, old version of System Disk 5.

To be truly complete, the list should have included the Icons directory and its contents in the root directory and a Tools directory and its contents under the System directory.

In experimenting with this minimum-disk idea, the best procedure I've found is to format a clean disk on which you'll install the minimum operating system, use the Installer program from the System.Tools disk to set up a fully operational System disk, and then remove any unnecessary files.

Your minimum configuration will probably differ, depending on the files you decide to leave in. By removing the CDEV's and Desk.ACDS folder, and stripping the Fonts and Drivers folders down to the bare minimum, I produced a working system disk with a little more than 200K left over for files. Here are my recommendations:

- **Root directory.** BASIC.Launcher, BASIC.System, ProDOS; Icons, System folders.
- **Icons.** Finder.Icons, Finder.Icons.X, Ftype.AUX, Ftype.Main.
- **System.** Error.MSG, GS.OS, GS.OS.DEV, P8, Start, Start.GS.OS; Drivers, Fonts, FSTs, System.Setup, Tools folders.
- **Drivers.** AppleDisk3.5, Console.Driver.

• **Fonts.** FastFont (unless you're running GS/OS software that requires system fonts such as Geneva or Shaston).

• **FSTs.** CHAR.FST, PRO.FST.

• **System.Setup.** CDEV.INIT, Resource.MGR, SYS.Resources, Tool.Setup. If your system has ROM 01, keep file TS2. If your system has ROM 03, keep file TS3.

• Keep all tools in the Tools folder.

• If you don't need Applesoft BASIC, you can save a little more space by deleting BASIC.System and BASIC.Launcher.

CLEAN UP YOUR ACT

I'M HAVING PROBLEMS WITH A "disk is write protected" error when I try to save to a disk I know for sure isn't write protected. I get an error on both Apple DuoDisk 5.25-inch drives. I've disconnected, then reconnected, cables; if I spray the connections with TV-tuner cleaner, the system behaves for a few days, then reverts to the error. Diagnostics don't show any problem with the write-protection hardware. Any ideas for solving this mystery?

Mark Klocksinn
Wilmette, IL

Instinct tells me the connectors are probably corroded. Try taking a soft pencil eraser and cleaning the contacts gently. I don't advise doing this very often because it can eventually erase the gold from the connectors, in which case you'll really be in duck soup.

For a more high-tech solution, use a high-quality contact cleaner and an old toothbrush. Repeated spraying and scrubbing should clean things up. Some cleaners also protect against corrosion; you should be able to find one at any good electronics-supply store. Our thanks to Guy Forsythe and Walt Roshon.

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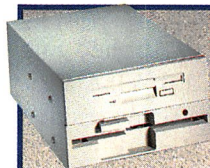
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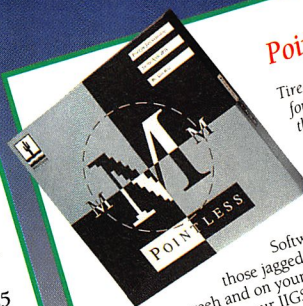
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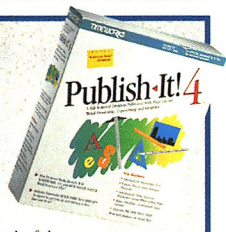
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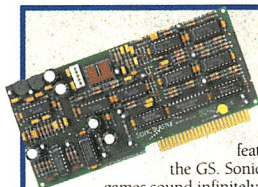


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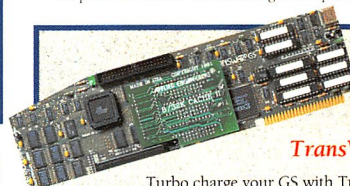
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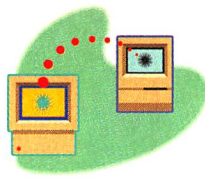
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BRIDGING THE GAP

JOKERS WILD

Let's tell the developers what we *really* want
— and we're not kidding.

By GREGG KEIZER

CUPERTINO, CA, APRIL 1 — FLASH! Now that the Apple IIGs can run Macintosh programs — thanks to the **MultiMagic** board from AEE — we're all resting a little easier. No more worry about falling behind the technological curve. No more wondering how you're going to make the transition. No more Mac envy, not when GS prices have plummeted to less than \$600. Why pay more when you can get it all for less, much less?

And the recent introduction of the **Apple IIGs Plus+**, the 33-megahertz classroom and home computer, has jolted even the

cynics here. The machine may have put the bite on the Macintosh Classic, but that was a computer just skirting around the rim of obsolescence anyway.

That's why the **Macintosh Classic II Plus++** (never say that the Macintosh arm lets the Apple II side have the last word) is such a welcome addition to the lineup. With its 68040 microprocessor, this RAM-packed machine can really run System 7 (no kidding). And its built-in color monitor makes *PGA Tour Golf* an almost heavenly experience. Not to mention the bundled **Apple II/IIGs Card**,

which lets the computer run every Apple II program still on a floppy disk, including gems such as *Wings of Fury* and *VisiCalc*.

Hey, wake up. This is a dream, right? You wish. No, it's no dream — just a cruel hoax. But even hoaxes have their purpose. We may be only voices in the wilderness between the past of the Apple II and

the future of the Macintosh, but we have a right to be heard. I'll assume the mantle of spokesman (I appropriate authority with slippery ease — just ask anyone I've ever worked for) and talk loudly for us all.

Let's play a joke on developers and hardware manufacturers — let's tell them what we *really* want. They may think it's just another prank, but we mean business. Here are the April Fool's headlines we'd love to see, the headlines that would make bridging the gap all that much easier, or at least a lot more fun.

IBM/APPLE UNLOADS II

In a move that surprised no one, IBM/Apple bailed out of the Apple II market, selling all rights to develop and sell the venerable line to a consortium of Apple II user groups and the National Education Association (NEA).

"We just couldn't be bothered with the Apple IIe and IIGs any longer," said an unidentified spokesperson from IBM. "We wanted to clear the decks for the really cool stuff we have planned for 1997." Added an Apple public-relations specialist, "The Apple II was old news. We like new news better."

With a handful of engineers culled from Apple safely tucked away in the new not-for-profit company, called **II U**, and factory space leased from a former GM plant in Arlington, Texas, fresh IIs began rolling off the lines in late July. The first, an Apple IIGs upgrade named the **GS+**, includes a 40-megabyte hard-disk drive, an accelerated CPU, 4 megabytes of RAM, and a 12-inch color monitor. Price? A low-rent \$1200, available only through schools and user groups with at least 50 members.

"We found that schools and user groups give better before-and-after sales support than most Apple dealers," said a II U spokeswoman.

AFE/II FINALLY MAKES IT

Apple File Exchange for the II was released today at a press conference held



in the San Diego offices of Beagle Bros, the noted utility and application developer for the Apple II and Macintosh.

Mimicking the maneuvers of the Macintosh version of AFE — a utility that offers file translation between ProDOS and the Macintosh operating system — **AFE/II** runs on the Apple IIGS and IIGS+. AFE/II accepts all Macintosh floppy disks, including 400K and 1.2-megabyte disks, translates Macintosh files into both ProDOS and GS/OS formats, and builds Mac files from II documents. "It's as easy to use as AppleWorks," claimed a Beagle Bros spokeswoman.

Though AFE/II will be priced at \$59.95, a special introductory offer of \$29.95 is in effect until October 31, 1992.

MACINTOSH LC BUNDLED WITH APPLE II CARD, V. 2.0

Recognizing that the Macintosh LC is almost exclusively a home and classroom computer, Apple has begun bundling the **Apple II Card** with every machine. In a surprise move, Apple said that no price increase was expected.

Version 2.0 of the card with accompanying software corrects some of the problems seen in the first release of the emulation board. Hard-disk-drive space on the LC can now be set aside for Apple II/IIGS software, printing from Apple II applications is always available, and automatic and transparent file-transfer utilities allow Apple II and Macintosh data to intermingle.

REMOTE CONTROL NOW EXTENDS TO APPLE IIGS+

Based on the successful AppleTalk Remote Access for the Macintosh line, Vitesse recently announced the release of **Co-Conspirator**, a remote-control application for the Apple IIGS series.

Co-Conspirator turns an Apple IIGS+ into a remote terminal of any Macintosh running AppleTalk Remote Access. Although only one GS+ can access any given Mac, Co-Conspirator lets home users connect to office-bound Macs, run programs on the Mac long-distance, and see them appear on the Apple IIGS+ screen in the den. Through special compression techniques, Co-Conspirator requires only a 2400-baud modem on both ends.

"This should jump-start Apple IIGS+ sales," said a Vitesse spokesman. "You can work with Excel or Microsoft Word at the office during the day, then finish up the work at home on your GS. When you're done with the Apple II, the kids can play games or do their homework."

GAMES AT THE NET

Maxis, makers of the revolutionary **SimCity** and **SimEarth**, today released multi-player AppleTalk versions of both simulations. Once a copy is placed on any Macintosh running System 7.0, users on both Macintosh and Apple IIGS machines can participate in building cities and running planets.

"We think this will be a great program for schoolkids of all ages," said a Maxis spokeswoman. "Social studies, civics, and science classrooms within the same school can play cooperatively or competitively, refining evolution in SimEarth or managing modern urban areas in SimCity."

An AppleTalk network version of **SimAnt**, the ant colony-like simulation, is reportedly not far from release. And in a related story, MECC has announced an Apple IIGS version of its popular **Oregon Trail** for AppleTalk.

NEW INTEGRATED PACKAGE NOW INCLUDES APPLEWORKS

In a surprise move, Claris Corporation has announced plans to release **ClarisWorks Extra** by midsummer, inside sources report.

Based on ClarisWorks, the all-in-one integrated program for the Macintosh, Extra incorporates an AppleWorks look-alike module that puts the comfortably familiar index-card interface on any Macintosh screen. All commands in AppleWorks 3.0 are supported, while data files produced within the AW module can be called directly by ClarisWorks itself. ClarisWorks documents also translate themselves automatically into AppleWorks versions at the touch of a key.

"ClarisWorks Extra makes the transition to the Macintosh even more of a 'no-brainer' decision," said a Claris spokesperson. "Users who can't tear themselves away from their Apple IIs because of AppleWorks can now safely make the move to the Macintosh, then wean themselves from

that program as they slowly migrate their data and documents to ClarisWorks."

Days after the announcement, news leaks from Beagle Bros and Symantec report similar projects to upgrade **BeagleWorks** and **GreatWorks**, respectively.

DOUBLE YOUR DRIVING PLEASURE

Quality Computers, a widely known seller of hard-disk drives in the Apple II and Macintosh markets, has just released its **DoubleTrouble** hard-disk drive.

The DoubleTrouble drive, in both 100- and 200-megabyte sizes, comes with DoubleIt partitioning software and two 6-foot lengths of SCSI cabling. Aimed at users with both Apple II and Macintosh computers, the DoubleTrouble drive and partitioning software allows ProDOS, GS/OS, and Macintosh files and applications to be stored on the same hard-disk-drive platter.

Although the drive cannot be accessed simultaneously by both connected computers, users can retrieve data without unplugging cables or rebooting either machine or the hard-disk drive. An ingenious utility called Tunnel even lets users retrieve files in the GS/OS partition from a Macintosh, or Mac-formatted data from an Apple IIGS.

"You can spend more on two separate drives," said a Quality sales representative in a recent telephone conversation, "but you save money with a DoubleTrouble drive. There's only one case and one power supply, so we can sell it to you for less. Frankly, the partitioning software gave us fits, but once we had that worked out, we knew we had a super product."

Orders from school districts and two-computer homes are expected to dominate sales of the DoubleTrouble, said an unidentified analyst.

II U ANNOUNCES BUILT-IN IIE APLETALK

The new black-cased Apple IIe — dubbed the "**Vader E**" by some members of the press — now rolling off II U's Arlington assembly line has a built-in AppleTalk port, much like the Apple IIGS and IIGS+.

Making the former Apple II Workstation Card obsolete, the Vader E can be connected

BRIDGING THE GAP

quickly to an existing AppleTalk network as a diskless terminal when AppleShare is running from a Macintosh.

"By incorporating AppleTalk into every Apple we manufacture," said a II U spokesman, "we're making sure that schools everywhere can afford to network their computer inventory."

GS/OS 7.0 TO INCLUDE FILE SHARING

The remnants of Apple's GS/OS development team have put the final touches on **System 7.0**, and hope to have it available for beta testing no later than July, unidentified sources now report.

System 7.0's most impressive feature is a file-sharing capability similar to that already available on the Macintosh under its own System 7.0. By setting up an Apple IIgs or IIgs+ with System 7.0's file sharing, Apple II and GS users can exchange files and data easily between workstations.

In fact, if all goes according to plan, users will be able to utilize an Apple IIgs or

IIgs+ as an elementary file server, eliminating the need for a Macintosh on the network.

"We want to really push the envelope on the GS," said one senior programmer on the System 7.0 team. "Even though Apple's not making the machines anymore, we think there are untold thousands, maybe millions, of Apple IIs that will suddenly be more useful when 7.0 hits the streets."

E-MAIL FINALLY MAKES IT

Cymon Computing, a small startup from the Nebraska prairie, has just released **No Postage Due**, the first cross-platform electronic-mail package for the Apple II and Macintosh.

No Postage Due uses an envelope-and-letter metaphor to make sending e-mail easy enough for schoolchildren. With complementary versions available for both the Apple IIgs and the Macintosh, No Postage Due comes as a desk accessory/INIT combination.

To send an e-mail message over the AppleTalk network (file server not required), users simply call up the desk accessory, address the envelope, and either type a message or attach a file. When a message is received, the INIT calls up a small pop-up window to notify you of the message's length and sender.

A stripped-down ProDOS version of the program is under development, and has been promised for delivery by the end of the fourth quarter.

TRADE-IN OFFER ANNOUNCED

Apple Computer, in a bid to strengthen its position in the home and classroom market, is expected to announce today its first-ever trade-in offer.

Although details are still sketchy at press time, the offer will probably involve only the **Macintosh Classic**, **Classic Plus**, **LC**, and **LC Plus** computers, Apple's stalwart home and school machines.

With every pair of IIe computers returned to any Apple dealer, Apple Computer will award a certificate redeemable for one Macintosh Classic. Apple IIgs computers will be replaced on a one-for-one basis with Classics.

It is reported that Macintosh LCs will command a higher "price," perhaps as many as four IIs or two IIgs computers.

Apple Public Relations refused to comment on the plan or its possible unveiling.

GOTCHA!

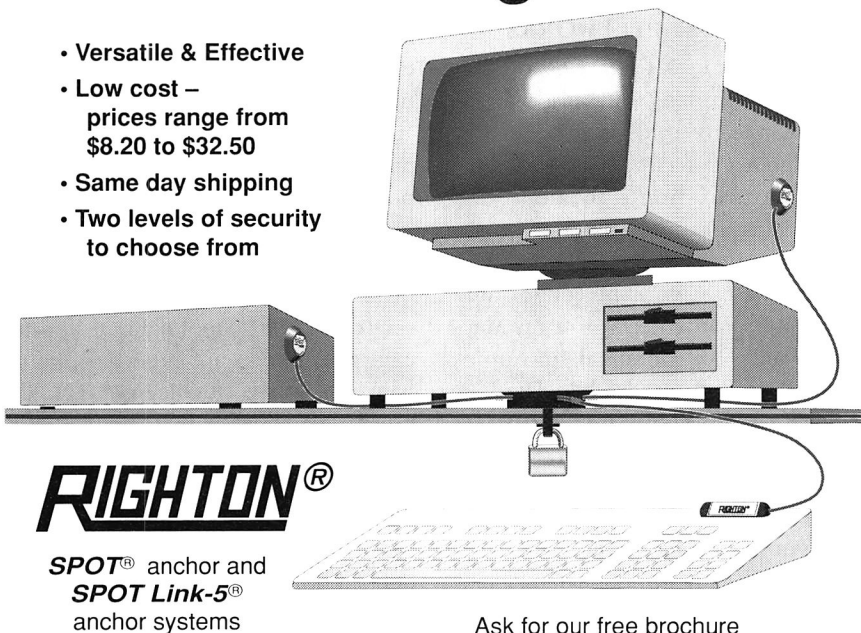
It's too bad that all (or, at best, almost all) of these April Fools will remain just that — jokes on those of us trying to mix and match the Apple II and Macintosh.

But there are ways around many of the connectivity problems these imaginary products would solve. That's what Bridging the Gap is all about. Whether it's managing with one hard-disk drive for two computers, setting up basic e-mail with System 7.0, or correcting student reports from home by connecting to the school's Macintosh, you *can* span the biggest chasms between the Mac and the Apple II. Stay tuned: Next month the solutions will be real. Then the joke's on *them*. □

WRITE TO CONTRIBUTING EDITOR GREGG KEIZER AT 4420 HILYARD STREET, EUGENE, OR 97405.

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REVIEWS



POOR GOOD GREAT

PGA TOUR GOLF VS. OIDS

What's your pleasure? A down-to-earth sports simulation that's as real as they come on a computer screen? Or a good old-fashioned shoot-'em-up arcade space fantasy? You always knew your Mac was the most versatile machine around — at least for all those “productivity” chores you had to do. But now you're discovering that when it's time to take a break from work, your Mac's ready to play, too. C'mon — boot up. Ever dream about teeing off with the pros? Finally —



a good-looking golf game for the Macintosh. It's not as if the Mac hasn't had its share of links simulations. MacGolf, the granddaddy of them all, was a landmark Mac game and ate thousands of work hours. Visually, though, MacGolf, and the games that followed it, were something less than dazzling.

But PGA Tour Golf, new from Electronic Arts, is as much fun to look at as it is to play. Colors are bright, animation is smooth. (Okay, *smooth* is a relative term, but on a Macintosh LC, PGA Tour Golf whips the club around in a fluid approximation of the real thing.) Sounds are almost enchanting.

Packed with three Tournament Players' Club (TPC) courses, 18 bonus fantasy holes, competition from brand-name pros, and all the extras you expect from top-flight (pun intended) golf games, PGA Tour Golf is the linkster's Macintosh home companion.

Got a different kind of fantasy in mind? How's this scenario? *They come running from their broken prisons, little arms waving wildly. "Here, we're down here," their gestures seem to say. And then they scurry back and forth, back and forth, waiting for rescue.*

Pathetic. It's enough to melt the heart of the most cynical game player.

OIDS, they're called, and so is the game. This search-and-rescue, search-and-destroy space game strikes old chords from arcades of long ago, when Asteroids and Defender ruled the bars and malls.

Toss in a nifty game editor and enough on-line interest to foster scores of new worlds to conquer (and more wretched OIDS androids to liberate from their Biocrete masters), and you have a game worth keeping on your hard-disk drive.

Don't expect OIDS to push the game-technology envelope (few Macintosh games do, so don't fret it); don't expect to be bowled over by graphics or sound.

PGA TOUR GOLF

Electronic Arts
1450 Fashion Island Blvd.
San Mateo, CA 94404
(415) 571-7171

- golf simulation
- Macintosh Plus or higher
- 1MB (2MB color)
- System 6.0.5 or later
- \$59.95

OIDS

FTL Games
P.O. Box 710490
San Diego, CA 92171
(619) 453-5711

- space arcade game with editor
- Macintosh Plus or higher
- 1MB (2MB color)
- v1.2 System 7 compatible
- \$44.95

Just expect a heavy — and addictive — dose of entertainment. It must be those miserable OIDS and their pitiful cries for help.

TEE TIME

To anyone who's teed up in front of a personal computer, PGA Tour Golf feels as comfortable as an old golf glove. If you've played almost any other golf simulation, you can hit a credible round right out of the box, though it might be a good idea to bang out a few practice balls on the driving range.

You don't have to play alone, either. Want to shoot in a foursome, but can't find anyone to join you? No problem. You can put together a trio of computer-controlled players before you tee up. They're not the best or smartest competitors; you shouldn't have much problem beating their scores if you're an average faux golfer.

Not only do you have your choice of golfing buddies, but you can pick the course you'll walk. PGA Tour Golf includes three excellent reproductions: TPC at Sawgrass (Florida), TPC at Avenel (Maryland), and TPC at PGA West (California). These stadium courses are among the toughest on the PGA tour. On the Macintosh, they challenge you to hit the ball accurately and plan your shot sequence carefully.

PGA Tour Golf hands you several tools to meet that challenge. At any time you can call up an overhead view of the hole that lets you plot distances and aiming angles. An ever-present caddy picks your clubs — a boon to the insecure or inexperienced — but you can override his recommendations at any time. And an on-screen arrow shows you wind direction and velocity, something no golfer on the fairway gets.


NO GUTS, NO GLORY

But all the tools in the world won't help if you can't hit the ball. PGA Tour Golf sports a familiar interface here, too. You aim by clicking on directional arrows (or by simply clicking on the screen, whether you're looking down the fairway or from the blimp shot overhead). Ditto with picking your club.

To hit, you press the mouse button three times: once to start your backswing, another to set the power of your swing, and a third time to actually hit the ball. Strike it too early or late and you'll hook or slice the ball. On some holes, you'll want to

APPLE II REPORT


 **MUST BUY!**
 **FORGET IT**
 **WORTH A SECOND LOOK**

 **ALEXANDER AND THE TERRIBLE, HORRIBLE, NO GOOD, VERY BAD DAY**

Sunburst Communications
101 Castleton St.
Pleasantville, NY 10570-9905
(800) 628-8897, (914) 747-3310

- new creative-writing program
- 128K Apple II
- requires Sunburst's Magic Slate II/40 columns
- \$59.95

Encourage kids to write about their favorite storybook characters with Sunburst's Magic Slate word processor and Judith Viorst's classic children's tale about Alexander and his terrible day. The Teacher's Guide contains 15 creative-writing projects for youngsters in grades 2 through 4. Lessons combine art projects and language-arts activities, using word-for-word scripts from the text as story starters. This literature/software combination is a great way to help young authors develop process writing skills.

 **BIG BOOK MAKER: TALL TALES & AMERICAN FOLK HEROES**

Pelican Software/Queue Inc.
338 Commerce Drive
Fairfield, CT 06430
(800) 232-2224, (203) 335-0906

- new creative-writing/desktop-publishing program
- 128K Apple II
- \$49.95

Children write, illustrate, and publish their very own American folklore storybooks, "Big Books," posters, and bulletin-board displays with Pelican's desktop publisher, Big Book Maker. This software helps youngsters write their own tall tales by providing pictures of larger-than-life heroes such as Annie Oakley, Davy Crockett, Johnny Appleseed, John Henry, Pecos Bill, and Paul Bunyan. Big Book Maker also comes with clip art, graphics-

screen backgrounds, six type-style options, and suggestions for language-arts projects.

 **COMPUTER CONNECTIONS: LEVEL 4**

D.C. Heath and Co.
125 Spring St.
Lexington, MA 02173
(617) 862-6650
William K. Bradford Publishing Co.
310 School St.
Acton, MA 01720
(800) 421-2009, (508) 263-6996

- new computer-literacy activities
- 128K Apple
- \$125

This package is designed to build computer literacy in older elementary-school children. It provides word-processing, database, and spreadsheet activities to complement lessons in Heath's Mathematics Connections basal-math series for K-12. Kids also learn to use the database program's graphing functions to plot numeric data. Student worksheets supplement hands-on computerized math exercises. Separate activities for teachers are also included, focusing on administrative tools such as an electronic gradebook (spreadsheet), a class register (database), and a field-trip permission slip (word processor).

 **DYNAMICS IN SPACE**

Higher-Order Thinking Company
1733 Northeast Patterson Drive
Lee's Summit, MO 64063
(816) 524-2701

- new physics games
- 64K Apple II
- \$29.95

Physics students in grades 11 and 12 will appreciate this program's electronic-game-style approach to the application of kinematics (the science of motion) and dynamics (the effects of force on matter). Challengers work alone or compete against a friend to apply concepts such as force, acceleration, motion, and velocity as they try to dock an animated rocket at a variety of space stations. The menu-driven game offers five difficulty levels (involving increasingly complex tunnels) and awards higher scores for more efficient use of fuel.

Continued on p. 28

do this purposefully, perhaps to avoid a nasty water hazard or bunker, or to maneuver around a dogleg.

Putting is similar. Line up the ball, taking into account the lay of the green, and put through the ball. In PGA Tour Golf, greens don't really break per se, but they do have swales and plateaus. A grid

view gives you a good idea of where the ball may go.

All the while, you're competing against a roster of PGA stars, as well as anyone in your group. You start out even on the first round of the four-day tournament, and must not only make the cut each round, but charge the leader if you expect to win

the big money. It's not easy — as in the PGA, bogeys are akin to death, and birdies required.

PGA Tour Golf plays under System 7 without problems. If you have enough RAM in your Macintosh, you can operate it under Multifinder or System 7 and keep other applications active, too. That's

Continued on p. 50

APPLE II REPORT

Continued from p. 27

FRACTIONS & DECIMALS: MATH WORD PROBLEMS

**Weekly Reader Software/
Optimum Resource, Inc.
10 Station Place
Norfolk, CT 06058
(800) 327-1473**

- new math-skill builder
- 48K Apple II
- \$49.95

Kids (aged 8 and up) build fraction and decimal skills with this educational package from Weekly Reader. The disk contains hundreds of word problems, grouped in 25 levels. An on-screen editor lets teachers or parents write custom exercises tailored to the needs of individual children. Record-keeping options let you track the progress of up to 40 students. It offers no graphics-type visual reinforcement.

GROUP GRAMMAR

**Tom Snyder Productions
90 Sherman St.
Cambridge, MA 02140
(800) 342-0236**

- new grammar program
- 64K Apple II
- \$79.95

If your children don't know the difference between direct and indirect objects or collective and proper nouns, try this game-like approach to the study of language. The program teaches grammar concepts by engaging children in entertaining activities. First, it presents readers with an illustrated story, one page at a time; then it breaks the page into nine phrases and asks players to find those that match a target grammar rule. Kids score points for each target they locate. A built-in editor lets youngsters write their own stories and determine target grammar rules.

JUNGLE SAFARI

**Orange Cherry Software
Box 390
Westchester Avenue
Pound Ridge, NY 10576
(800) 672-6002**

- new environmental-education program
- 1MB Apple IIcs
- hard disk recommended
- \$49 home edition

Great sound effects and colorful animated graphics await armchair naturalists in Jungle Safari. Explorers investigate 80 animals and plants native to four different habitats in East and Central Africa. Youngsters steer a jeep over hill and dale as they explore the terrain. An on-screen joystick lets you zoom in on particular flora and fauna in rainforest, tall-grass, and river habitats. In addition to providing a realistic picture of several African animals, the program offers a brief text description for each animal in the database.

MATH BINGO

**DLM Teaching Resources
1 DLM Park
Allen, TX 75002
(800) 527-4747**

- new math-skill builder
- 64K Apple II
- \$39.95

Encourage children of all ages to practice their arithmetic skills by playing Math Bingo. The program lets you print up to 99 bingo cards with answers to questions of varying difficulty. Easy levels require players to match card numbers with screen numbers. Harder levels require challengers to solve problems involving addition, subtraction, multiplication, and division with both positive and negative numbers. Before play, challengers choose one of four number ranges, and decide the length of time a problem will remain visible on screen. Math Bingo is a fun way to build basic arithmetic skills.

MEDIA MAGIC

**Pelican Software/Queue, Inc.
338 Commerce Drive
Fairfield, CT 06430
(800) 232-2224, (203) 335-0906**

- new desktop-presentation package
- 128K Apple II
- \$119.95

Media Magic contains three integrated programs to create self-running desktop presentations: an Art Studio to design graphics, a Melody Studio to compose simple tunes, and a Show Maker to put it all together. Armchair directors build screens containing original songs, animation, backgrounds, sounds, and clip art, or use items from the program's sound and graphics libraries to simplify assembly of a desktop extravaganza. Look for a review in an upcoming issue of inCider/A+.

PROTERM 3.0

**InSync Software
3035 East Topaz Circle
Phoenix, AZ 85028
(602) 992-1345**

- new-version telecommunications program
- 128K enhanced Apple IIe, IIc, IIgs
- \$129.95
- \$20.50 update before July 1, 1991
- \$45.50 update after July 1, 1991

Go on line with your favorite information service or bulletin board with this powerful Apple II telecommunications program. The latest version has been completely redesigned and rewritten, adding pull-down and pop-up menus, optional mouse support, and enhanced word-processing capabilities. You get macro options, a variety of file-transfer protocols, plus several terminal-emulation modes. In addition, the package contains disk utilities and a screen saver. It's amazing how much "stuff" has been packed into this 8-bit Apple II communications program. Look for a review in an upcoming issue of inCider/A+.

— Carol S. Holzberg, Ph.D.



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The 800K version of the AE drive works with the IIe, IIc Plus, IIGS, Macs and our PC Transporter. For IIe owners, we've even designed a low-cost optional controller card that allows the IIe to accept data from the 3.5 format. The AE Drive is also Macintosh compatible as an 800K drive. And owners of AE's 800K drive wanting 1.6 MEG high density capacity for their IIGS can affordably upgrade.

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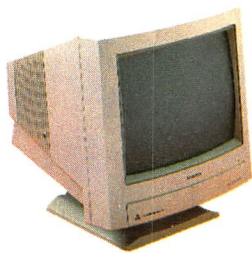
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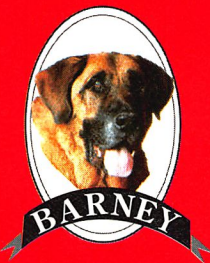
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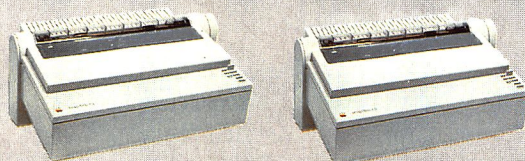
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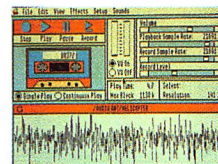
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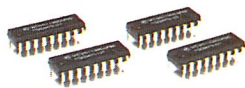
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Fifth Generation Systems

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Orange Micro

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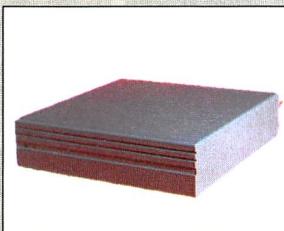
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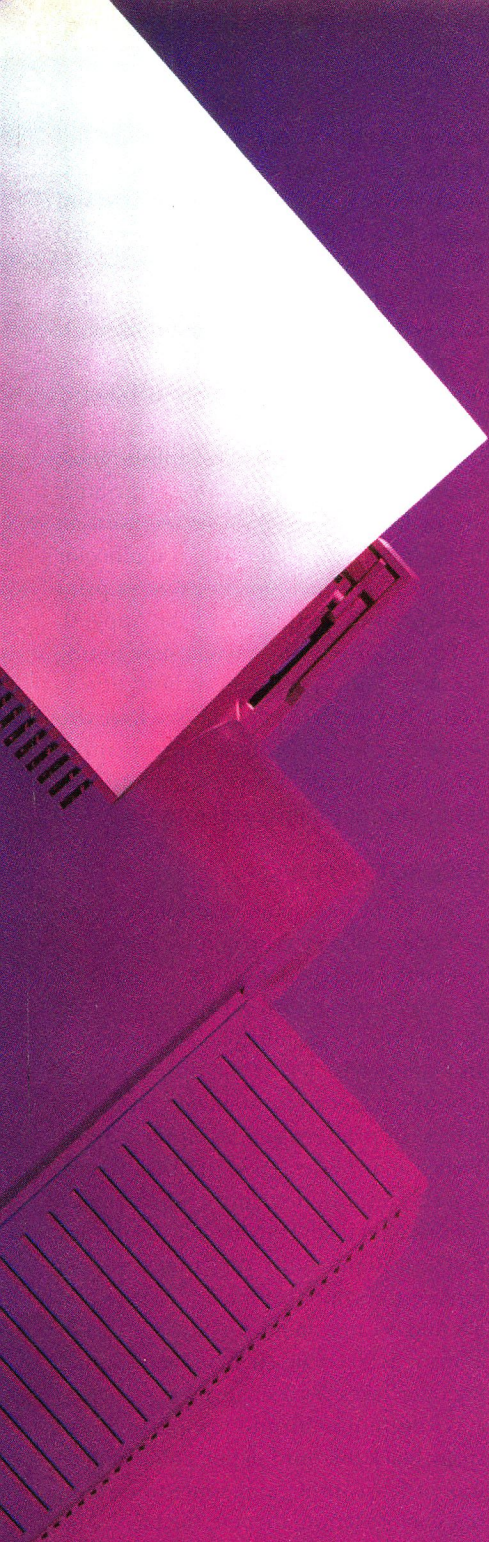




Despite what mother told you,
looks *do* count — especially
when it comes to computer-
generated documents.

Fortunately, Apple II and Mac
users have a range of printer
options to choose from.

Regardless of the computer
you own or the budget you keep,
there's a machine out there
that will help you dress
your hardcopy for success.



WORDS I • N • T • O PRINT

By **GREGG KEIZER** * CONTRIBUTING EDITOR

Across the centuries, the written word speaks loudly and long — not only of the author's thoughts, but of the technology used to re-create those thoughts on the page. From the scratching of quill pens in the quiet of a Celtic cloister to the slap of Gutenberg's letterpress, from the clatter of a typewriter to the roar of modern photo-offset cylinders, the business of printing has always been anything but silent.

Today, computer-controlled "publishing" has come home: Apple IIs and Macintoshes can produce compelling documents, churn through columns of figures, and generate dazzling graphics. But without some way to put marks on paper, they're mute in a world filled with conversation. You need to connect that II or Mac to a printer, a machine to handle the array of communication chores you've set for yourself and your personal computer.

Three basic technologies offer a range of capabilities and type qualities to choose from — and bring that hum of production to your family room, classroom, or office. Whether it's the hammering of dot-matrix, the whisper of ink-jet, or the rustle of paper pulled through a laser, noise means words, numbers, and graphics are being laid on the sheets.

Each printer model has its claims to fame and does its own damage to your pocketbook; dot-matrix comes cheapest, laser comes dearest, and ink-jet rules the middle ground. What's best for you and your computer? That'll depend as much on your budget, your demands, and your patience as it does on your eye for esthetic detail.

CONNECT THE DOTS

Pins on paper — that's the essence of dot-matrix printing. Still the least-expensive technology going — though its days as the price leader are slipping away — dot-matrix

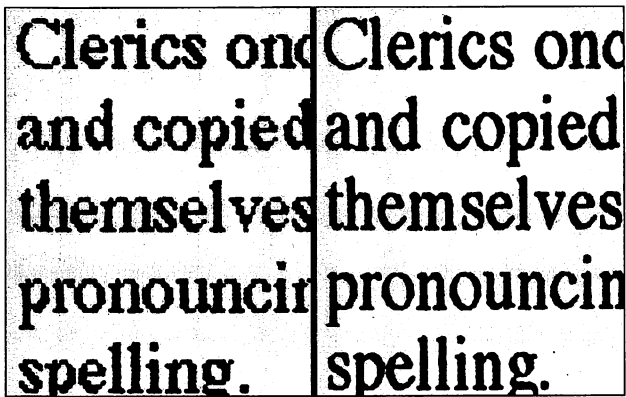


Figure 1. MacWrite II file produced by ImageWriter II dot-matrix printer. Left, draft quality; right, best quality.

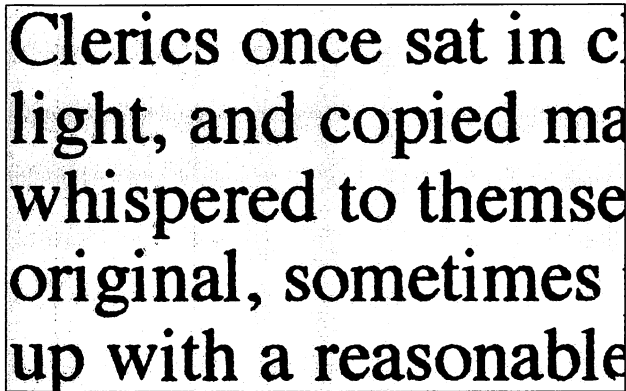


Figure 2. DeskWriter C ink-jet output.

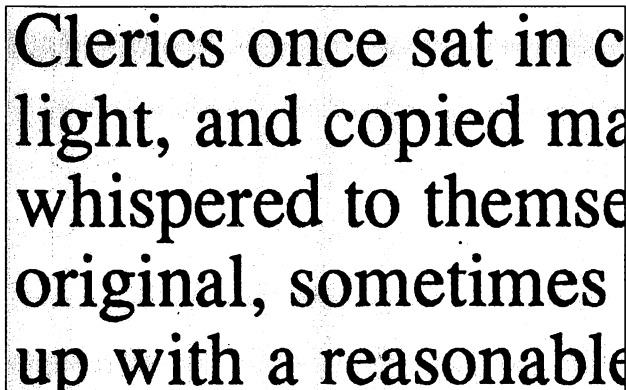


Figure 3. Okidata OL 840 PostScript output.

printing relies on a matrix of thin pins striking an ink-soaked ribbon to put images on paper. This *impact printing*, as it's sometimes called, is as close to the tradition of typewriters as you'll find in widespread use with personal computers.

Under the computer's control, a dot-matrix printer stamps those metal pins against the ribbon in various combinations to impress alphanumeric characters and graphics on paper. The printhead, which holds those pins and the strikers that push them forward, slides back and forth along a bar within the printer as it forms letters, numbers, and images. The resulting sound, a heavy metallic buzz or

rasp, is the loudest of any of the three primary printer technologies — not surprising, since it's based on things hitting each other.

Dot-matrix printers are commonly known by the number of pins within the printhead. A 9-pin printer, for instance, uses nine pins in a three-by-three layout to form characters, while a 24-pin printer fires that many pins from a broader matrix. A 24-pin printer, naturally, creates crisper characters and smoother graphics images.

Apple's ImageWriter, the most widely known and most popular dot-matrix printer among Apple II and Macintosh owners, hasn't changed much over the years: The **ImageWriter II** is based on the same 9-pin technology as the original ImageWriter of 1984.

Other companies besides Apple market printers, of course. Apple II and Macintosh owners can turn to options such as the **Seikosha SP-2000AP** or the **Toshiba P321SL**, for instance. The SP-2000AP, functionally equivalent to the ImageWriter, costs

significantly less than the Apple printer, while the P321SL (no longer on the retail market, but it may be worth looking for a used one in good condition) utilizes outline fonts and a Mac printer driver to produce top-notch type in Times, Helvetica, and Courier fonts.

Compared to the alternative technologies, dot-matrix printers are slow and loud. While laser printers pump out four more pages of text per minute, even fast dot-matrix models like the Toshiba P321SL are hard pressed to produce a page a minute. And though resolutions on 24-pin dot-matrix printers look good on the spec sheet (**Figure 1**), they simply can't reproduce the same crisp output as a laser — or even an ink-jet — printer.

Software such as **Adobe Type Manager** and **Pointless** solve part of that problem when you use PostScript fonts with the Mac and Apple IIGS, respectively, but the speed and noise problems won't go away.

But dot-matrix printers still have a place beside Apple II and Mac computers. If your work requires multipart forms, the dot-matrix printer is your only real choice, as it is if you do frequent mass mailings, for continuous-feed labels are still the most economical. And though ink-jet printers are making inroads into the territory, an ImageWriter II printer with a multicolor ribbon is still the cheapest way to print color from either the Mac or the Apple II.

The demise of dot-matrix may not be far away, but it continues to hold title to Least Expensive, especially when you settle for output from a 9-pin printer. When the bottom line comes before anything else, dot-matrix still tops the list.

HEY, SQUIRT!

But not by much. Ink-jet printers, popular because of their crisp output, are closing fast on the heels of dot-matrix pricing. Ink-jet is a *non-impact* form of printing: No part of the printer actually touches the paper. Instead, precise jets of ink droplets spray onto the paper to form images and characters. In printers such as Apple's **StyleWriter** and Hewlett-Packard's **DeskWriter**, a self-contained printhead/cartridge combination holds both the ink and the tiny nozzles. Replace the cartridge and you replace the entire printhead, nozzles and all. And because an ink-jet cartridge carries as many as 60 nozzles, high-resolution printing often takes just a single pass.

While monochrome ink-jet printers spray black ink onto paper, color models mix at least three, and sometimes four, hues before jetting them to the page. And although inks sometimes smudge or run when wet, a few companies such as Hewlett-Packard now use improved formulas that resist smearing.

Since there's nothing banging away at the paper, ink-jet printers are much quieter than dot-matrix machines. All you'll hear is the printhead sliding back and forth, and the paper being pulled through the printer. And the output rivals that of laser printers. In fact, you'll be hard pressed to tell the difference in many cases (**Figure 2**).

Apple's own StyleWriter, a Kleenex-box-sized printer that sits on edge, is based on a Canon ink-jet engine. Though it works with a Macintosh, you can't plug it into a network or use it with an Apple II right now. (The upcoming GS/OS 6.0 includes a StyleWriter printer driver, however.) You can share HP's DeskWriter, a QuickDraw-based ink-jet printer, with several computers over AppleTalk, but it, too, won't find a home with an Apple II.

That honor goes to the **DeskJet 500**, ancestor of the DeskWriter. With printer-driver utilities such as **Independence** and **Harmonie**, Apple IIgs users can print both text and graphics to the DeskJet.

Ink-jet printers such as the StyleWriter and the DeskJet are price competitive with the ImageWriter. (The former lists for \$4 more than the ancient ImageWriter, while the latter runs about \$550 to \$600 if you shop mail order.) They're also competi-

tive when it comes to speed, although neither the StyleWriter nor the GS/DeskJet combination walks away with any Olympic records. The DeskWriter, when connected to a Macintosh, can push out pages at the rate of about one a minute.

But it's on the quality front where ink-jets are most impressive. Both the StyleWriter and the DeskWriter utilize the Macintosh's System 7 TrueType fonts as well as their own built-in outline fonts for crisp

A GLOSSARY OF PRINT BASICS

Not only are printers classified by the technology driving their physical components, but by the software technology that controls those components, as well. Let's look first at Macintosh compatibles, with their three basic printer "languages."

The oldest of the trio, **QuickDraw**, is a series of text- and graphics-display routines built into the Macintosh. All characters of installed QuickDraw fonts are **bit-mapped**: Particular sizes of a character, the positions of the pixels that make it up, are programmed individually. (Think of it as storing pictures of characters in various sizes.) Of course, system memory isn't large enough to hold bit maps of all characters in all fonts in all sizes. If you select a size for which there is no bit map in memory, the computer picks the closest size and adds or deletes pixels to reach the size you requested. The effect, particularly in large type sizes, is often jagged and unattractive — especially on screen, but also in print. QuickDraw printers come in laser (**GCC PLP II**, Apple's **Personal LaserWriter LS**), ink-jet (Apple **StyleWriter**, Hewlett-Packard **DeskWriter** and **DeskJet**), and dot-matrix (Apple **ImageWriter II**) models. Note that although QuickDraw-based, the HP ink-jet printers also contain their own proprietary "outline" fonts in memory; in addition, the StyleWriter contains resident TrueType outline fonts. (More on these technologies below.)

PostScript is the page-description language developed in the late 1980s by Adobe Systems. Type styles programmed in PostScript are one example of **outline fonts**: Mathematical formulas describe the curves and lines of a character and the way each part relates proportionally to the other parts. The font software includes the directions for drawing a character, rather than a picture of the character itself.

So-called PostScript laser printers, such as Apple's **Personal LaserWriter NT**, the **Okidata OL 840**, **QMS' PS 410**, and Texas Instruments' **Microlaser PS17**, contain in their memory an interpreter module that understands fonts and graphics written in the PostScript language. They typically contain in memory "resident" fonts written in PostScript, but also work with the PostScript fonts you download at print time. If you call for a type size that isn't installed in your system, the printer's PostScript interpreter **scales** the character up or down: interprets the font's mathematical instructions to produce a smooth-looking letter or number at the requested size. (PostScript models can also print bit-mapped QuickDraw material if that's what you're working with — but can't tinker with its appearance.) **Adobe Type**

Manager (ATM) is a utility that can scale PostScript fonts on screen for easier reading; in addition, it can interpret PostScript for non-PostScript printers, and scale fonts up or down for more-attractive output, even on dot-matrix models.

TrueType is Apple's own outline-font technology, introduced last year. Fonts written in TrueType are scalable if installed on a Mac with System 7.0, which contains the language interpreter; TrueType is also available separately on disk for System 6.0.7. As noted in the accompanying feature, Apple offers two TrueType printers: the **Personal LaserWriter LS** and the ink-jet **StyleWriter**. Both printers are QuickDraw-based, but they contain four resident TrueType fonts and, of course, can print other TrueType fonts downloaded from your system. (They're also compatible with ATM-interpreted PostScript fonts, though you can't print PostScript graphics with the StyleWriter.) You can download TrueType fonts and print them from PostScript or other QuickDraw models, as well — the TrueType font software functioning here something as ATM does for printing PostScript fonts on a non-PostScript machine.

For Apple IIs, the picture's a little simpler. In older word processors and page-layout software for the Apple II, fonts were either built into the program or not available. With the introduction of the GS, Apple defined a standard for sharing fonts; all so-called **GS fonts** are filetype **\$C8** — even when you're using them on a IIc, as long as your 8-bit software supports them. Software developed since then may or may not include support for GS fonts; if it does, that means that not only does it come with certain resident fonts, but it can also take advantage of any separate GS-type font packages you've installed in your operating system.

GS fonts are bit-mapped. The WestCode program **Pointless**, however, can create scalable outlines from GS fonts' bit-map information for more-attractive output, even on non-PostScript printers. It also includes a translator that can convert Mac TrueType fonts to GS format and a utility to adjust the fonts' elongated appearance on the GS screen. It doesn't recognize PostScript fonts. (When GS/OS 6.0 becomes widely available, you'll be able to load any Mac TrueType font on disk directly into your computer. With older operating systems, you can download Mac TrueType fonts via modem or an AppleShare file server.)

GS fonts print to II-compatible dot-matrix and printers and with the proper printer drivers to certain ink-jet models and PostScript lasers (although you won't get outline-font output, of course). GS/OS 6.0 contains a driver for the TrueType/QuickDraw StyleWriter ink-jet printer, but not for the Personal LaserWriter LS.

— E.T.

POSTSCRIPT OR NO SCRIPT?

As you peruse the scores of available laser printers, you'll fast see them fall into two camps: those with PostScript and those without. Add PostScript to a printer and the price nearly doubles. It's no wonder, then, that you may shake your head and wonder "what's in it for me?"

If all you want from a printer is fast words-and-numbers output, not much. Most non-PostScript laser printers come with a set of built-in outline fonts, after all, which will do for anyone assembling simple documents that don't depend on a wide selection of fonts or the most sophisticated graphics.

And unlike PC users, Mac and Apple IIGs owners have several alternatives to PostScript — QuickDraw, the Macintosh's own page-description language; TrueType, the new font technology included with System 7.0 (and coming soon to GS/OS 6.0); and font-manipulation software such as **Adobe Type Manager** (Macintosh) and **Pointless** (Apple IIGs).

Still, PostScript has its place. If you want to take advantage of PostScript's vast collection of fonts and of PostScript graphics programs such as **Adobe Illustrator** for the Macintosh, you'll want a printer with this page-description language built in. Page-layout programs in particular — Aldus' **PageMaker** and **Quark Xpress** among them — put PostScript to work assembling almost any document you can imagine.

A PostScript printer also simplifies printer sharing among Macintosh and Apple IIGs computers when it's part of a network. Plug a non-PostScript printer into an Apple IIGs and nothing comes out — unless you pop for a printer-driver package such as **Harmonie** or **Independence**, which slows down output. And because the GS doesn't use the Mac's page-description language, QuickDraw-based printers are out entirely. Put a PostScript printer on a network, though, and the GS produces both words and images seamlessly. (The latter, however, aren't processed by PostScript, but are simply mapped to the page bit by bit.)

The short version? Buy a PostScript printer if you plan on more than the occasional foray into graphics and desktop publishing, or if you want to simplify sharing a single printer with Macintosh and GS machines. But if the printer sits beside a single machine and does most of its work with words and numbers, save yourself some money and toss out the script. — G.K.

characters, while GS fonts can print through Independence or Harmonie. Ink-jet printers put graphics on paper with almost as much clarity as a laser printer, though images that use large areas of gray or black sometimes fall short. And you can't generate PostScript graphics with any ink-jet printer.

Color ink-jet printers are just starting to make an appearance: The least expensive are the \$1095 **DeskWriter C** (\$750 to \$800 mail order), a Mac-specific machine, and the **DeskJet 500C** (also \$1095). They do a credible job of duplicating on paper what you see on your color screen.

If you produce more text than graphics, ink-jet is an excellent alternative to dot-matrix printing, even when your budget is tight. Though ink-jet can't compete with lasers when printing demands are moderate or heavy, they're perfect for home, home office, and some small-business use. Ink-jet-only classrooms don't make much sense, because the printers

are relatively slow and expensive to operate, but for final copies they make a welcome addition to computer labs and even some budget-minded journalism classes.

Ink-jet printers strike a compromise between dot-matrix and laser; they fit comfortably between the two bookend technologies on price and performance.

LASERS ON THE DESKTOP

Laser printers sit at the top of the printer-technology heap, a spot they've occupied since they arrived on the desktop. But in the last couple of years, prices have tumbled enough to entice even frugal users to consider climbing the peak.

Another nonimpact technology, laser printing relies on the same basic components as a copy machine, though rather than scanning an original, a laser printer accepts a stream of bits and bytes arriving from the computer. A low-powered laser then sweeps its beam across a revolving metal drum, in effect painting

the drum with an electrical charge. As the drum turns, toner — a plastic powder with a very low melting point — affixes to the spots the laser touched, then is deposited on the paper. Finally, a heating element fuses toner to paper. The whole process takes less time to complete than to explain.

Typically, laser printers sport resolutions of 300 dots per inch (dpi), similar to the resolution of ink-jet. More important is the laser printer's ability to position those dots exactly, and the dots' small size. All contribute to producing sharp-edged characters and smooth scales of gray (**Figure 3**).

Sound and speed mark laser printers as the top-of-the-line printer technology, too. Laser printers aren't silent, of course, but they're far quieter than dot-matrix and, in most cases, quieter than ink-jet printers. And no other printer can spit out pages as fast. Even the lowest-priced laser printers toss out three to four pages of text a minute; some double that output.

Apple sells a wide range of lasers, including the bottom-line **Personal LaserWriter LS**, a four-page-per-minute printer that forgoes PostScript for the Mac's own QuickDraw page-description language. Even more prolific are third-party printers from such companies as Texas Instruments, Hewlett-Packard, and GCC. The **Micro-laser PS17** from Texas Instruments, for instance, is often priced below \$1300, complete with PostScript, 17 built-in fonts, and an AppleTalk port. GCC's **PLP II**, though not a PostScript printer, costs around \$850 direct, and is faster than the Personal LaserWriter LS. And the ubiquitous HP LaserJet line, particularly the low-priced **LaserJet IIP+**, can connect to Apple IIs and Macs when a PostScript cartridge is added or when a printer-driver package such as **Freedom of the Press** (Mac) or **Harmonie** (Apple IIGs) is installed on the computer's hard-disk drive.

A home office, perhaps even some small businesses, may be able to get by with a dot-matrix or an ink-jet printer, but if first impressions are vital or if you print more than short documents or the occasional invoice, a laser printer should be on the desktop. Desktop publishers and graphics creators won't want anything less than a laser printer, either. And nothing beats a laser printer when you've connected scores of computers in a network. But if you need color, cross off the laser printer — afford-

able color laser printers are still a dream for almost all of us.

If nothing but the best will do, pick up a laser printer. Though costs are at least 50 to 60 percent more than that of an ink-jet printer, a laser's quadrupled speed, slightly sharper output, and versatility with Apple II and Mac machines more than make up for the difference in dollars — if you have them to spend.

HARD COPY, HARD DECISIONS

Sooner or later, everything comes down to money, even picking a printer. Keep the cost of your computer in mind as you select your machine. It's not smart, after all, to get thrifty by buying a Mac Classic, then spend double that on a PostScript laser printer. Nor can a lowly dot-matrix printer do justice to a treasured Apple IIs that's bulging with performance extras such as accelerator board, extra memory, and hard-disk drive. Match the printer to the machine. Some of the best computer/printer combinations include Mac Classic/StyleWriter, LC/DesktopWriter, IIs/Personal LaserWriter LS, Apple IIfx/Seikosha SP-2000AP, and Apple IIGs/DesktopJet.

And look hard at just how much you print; calculate the number of pages you produce in a typical day or week. Why waste money buying more capacity than you'll ever use? Dot-matrix and ink-jet can handle light-duty printing — less than 100 pages a week, say. Heavy printing — more than 300 pages a week — virtually

PRINTING ON THE NET

Wherever a couple of computers gather, a network can't be far behind. Networks — collections of computers linked with cabling — make efficient file transfer possible and let you share scarce resources among several users. Printers are an obvious choice for distribution. But which type of printer works best when it has to work for many computers?

Speed is vital in a network, where several users may call on the printer simultaneously. The faster the printer completes a job, the sooner it can tackle others in the queue. PostScript laser printers make the most sensible network additions, even though they're the priciest: If it's PostScript-equipped, the printer can serve both Mac and GS masters without additional software, an important point in school labs and classrooms.

How a printer handles paper also plays a part. Here, too, laser printers

score, for they're less apt to jam than dot-matrix machines and usually hold more paper than an ink-jet model.

Though they carry the biggest price tag, laser printers are actually a bargain when added to a network. Rather than spend \$450 for an ImageWriter or a DeskWriter for each workstation, you can buy quality printing for as little as \$200 per computer (assuming a \$2000 laser printer available to 10 computers).

An ink-jet printer like the **DeskWriter** can stretch to fit network responsibilities, but you'd be wise to restrict it to a handful of machines. Dot-matrix should be shunned on a network unless you need such things as multipart-forms processing or elementary color printing.

Your best bet for network printing is a solid, dependable, and proven laser with PostScript, such as Apple's **LaserWriter IIx**, Okidata's **Okidata OL 840**, or **QMS' PS 410**. — G.K.

demand a laser. Anything in between is up for grabs, though low-cost, non-PostScript lasers make sense here.

Finally, consider what goes on paper. Printing words and numbers within a narrow range of fonts? Then pay a dot-matrix price and get something far better, an ink-jet printer. Producing camera-ready copy? You'll want the sharp output and flexibility that only a PostScript laser provides.

Balance cost against quantity and quality.

Compromise if you must, but put the best printer you can afford beside your computer. Just remember — others judge your work not by the computer you keep, but by the print on the page. □

CONTRIBUTING EDITOR GREGG KEIZER IS THE AUTHOR OF BRIDGING THE GAP, *INCIDER/A+*'S MONTHLY COLUMN ON APPLE II/MAC CONNECTIVITY. WRITE TO HIM AT 4420 HILYARD STREET, EUGENE, OR 97405. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.

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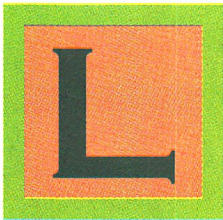
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Celebrate the spirit of Earth Day '92
with a host of entertaining
environmental-education
programs for your II or Mac.

GOOD EARTHKEEPING

By CYNTHIA E. FIELD, Ph.D. * CONTRIBUTING EDITOR



Let's face it: Mother Earth is trendy. You'd be hard pressed to find an issue of a newspaper or magazine these days that doesn't address some kind of ecological concern, such as toxic waste, air pollution, or plastics recycling.

But environmentalists can be preachy, and ecology texts too heavy-duty to wade through — for both kids and adults. That's why we're pleased to report that environmental-education programs for Apple IIs and Macs — including the dozen or so products described here — don't browbeat you into respecting the planet. Instead, they're positive, interactive — and fun. And best of all, these programs prove you don't need an advanced degree in rainforest biology to introduce environmental-education software into your home or classroom.

HOME GROWN

Even the youngest environmentalist in your family or school will enjoy delving into **Plants**, an inexpensive early-elementary program in Scholastic Software's **Science Explorers** series

for the Apple II. Like virtually all products mentioned in this article, *Plants* offers a variety of activities, including interactive tutorials and games.

The program's main menu looks like a field ecologist's spiral notebook. Beginners can select *Life as a Plant* or *How Plants Grow* to learn the rudiments of plant anatomy or physiology. Kids will enjoy the program's interactive approach, as well as its attractive illustrations of familiar plants. The simulation game *Plant Explorer* lets kids test, measure, and evaluate the effects of three environmental variables — heat, light, and water — on plant growth.

We particularly like the short-and-sweet (18 pages) user's guide with its "let's find out" approach to learning. Suggested off-computer activities, such as *Seed Art* and *Adopt a Tree*, sound like so much fun you may wish you were a kid again.

ART AND SCIENCE

If you prefer a holistic approach to learning about the environment and other topics, take a look at *MindPlay's*





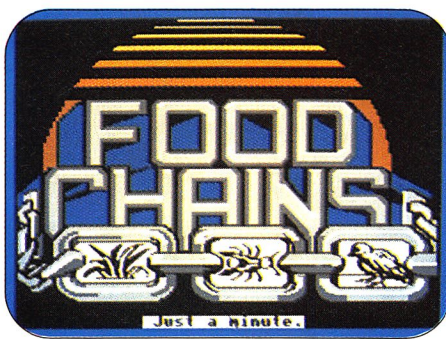
Kid-Leidoscope Newzine, for children aged 8 and up. Similar to a magazine, each Kid-Leidoscope volume includes five issues. Each issue consists of a computer-game disk for the Apple II and a four-page newsletter with short articles and activities, including word-search puzzles, *Concentration*-type games, and stories, revolving around a selected theme.

For environmental awareness, you can't beat Kid-Leidoscope's *Wildlife* and *Ecology* issues. The *Wildlife* issue (Volume 1, Issue 1) covers topics such as animal extinction, Dian Fossey's work with gorillas, and efforts to save the rainforest. Featured vocabulary includes *whale*, *giant panda*, *dodo*, *poacher*, and *animal trade*, among others. The *Ecology* newsletter (Volume 2, Issue 1) features a primer of recycling as well as easy science projects. In one of the five *Ace Detective* adventures on the *Ecology* disk, you collect clues and nab the culprit responsible for a toxic-waste spill on a local highway.

CHOW TIME

Grasping the nuances of environmental issues presumes some knowledge of higher-level topics, such as the flow of energy through ecosystems. That's not to say you have to master complicated mathematical models, though. In fact, children as young as 8 can easily digest concepts such as *producer*, *consumer*, and *decomposer*, thanks to MCE's **Food Chains** for the Apple II.

Through this program's interactive tutorials, children can expand their basic knowledge of trophic (feeding) levels and construct food chains, webs, and pyramids. Entertaining graphics images enhance the program's content. Youngsters will relish the hip, Rayban-wearing lion with burger in one hand and carrot in the other, an imaginative illustration that communicates the idea of omnivorous consumption far better than words.



Entertaining graphics screens highlight basic concepts of energy flow in **Food Chains**.



Kids examine life cycles within an aquatic ecosystem in **Exploring Tidepools**.

The **Food Chains** program guide suggests teaching strategies suitable for grades 3 to 6. Among the class projects are a comparison of the rates of decomposition of pieces of fruit exposed to air, soil, or disinfectant spray. A series of reproducible worksheets reinforces software concepts.

HEATING UP

Once you get some bio-basics under your belt, you'll be ready to tackle meatier environmental issues, such as those presented in **Science 1: The Environment** for the Apple II, a series of animated tutorials and simulations for grades 4 to 6 from the Ellen Nelson Learning Library.

The *Greenhouse* lesson teaches kids about atmospheric heating and cooling; *The Ecosystem* and *Using Energy* help students understand interactions among living things and the waste products — such as acid rain — that inevitably result. The lessons are interactive. For example, press the *O* and *C* keys to open and close the windows of the greenhouse and control temperature.

Westhills Energy Scramble is a simulation that challenges you — as mayor of Westhills — to reapportion the town's eight types of energy resources. Your goals are to reduce pollution and preserve the economy. Should Westhills increase its commitment to solar or wind energy? Increase its dependence on fossil fuels? Or build a nuclear power plant? The program presents the pros and cons of each choice.

An accompanying reference guide offers lesson plans and a series of *Find Out!* activities. Among these clever projects is one in which kids smear petroleum jelly on a glass microscope slide and place it on a windowsill for 24 hours to collect airborne particles for observation.

TIDY POOLS

Whether or not you live near the seacoast, your students will love **Exploring Tidepools**, a top-quality Apple II program for grades 5 to 7, developed for Walt Disney Computer Software and published by Wings for Learning. *Exploring Tidepools* is a novel introduction to small aquatic ecosystems; it lets kids navigate the worlds-unto-themselves that appear every day at high, mid-, and low tide along rocky coastlines. Among other things, students will gain an appreciation for the ability of some organisms to survive fluctuations in temperature, salinity, and oxygen level.

Concentrate on the macroscopic (naked eye) view, or zoom in for a microscopic look at life forms such as plankton (minute free-floating plants and animals)



that are otherwise invisible. Learn about life cycles and tidepool food webs. A reports/graphs feature lets you take notes, construct line or bar charts, and compile results into printed or visual displays — just as real scientists do.

Featuring colorful animated graphics (crawling hermit crabs, for instance) and icons (click on the microscope for a close-up view), the program also supports alternative input devices such as the mouse. It's not hypermedia, but Exploring Tidepools comes close, thanks to the free-form experimentation it encourages. The 65-page teacher's guide includes a "quick start" mini-manual and suggested activities.

LARGE-SCALE CONCERNS

Grizzly bears and whales are the featured performers in the **Audubon Wildlife Adventures** series for the Apple II, developed by Advanced Ideas, now available only from mail-order sources. (GS versions offer advanced sound effects and super-hi-res graphics.) Each program includes four activities, for explorers aged 9 and up, that combine ecology and sociology. Not only will you learn grizzly-bear and whale biology, you'll begin to appreciate the impact human activities have had upon these mammals.

On-line databases help you learn facts about grizzly-bear lifestyles, for instance, or show you how to identify whale species. In one game, you play the role of a biologist's assistant, tracking bears or photographing whales. Other games ask you to solve mysteries involving grizzly-bear poaching or stranded whales. Ecological concerns also come into play in simulation games such as *Oil Explorer*, in which you attempt to preserve a grizzly-bear habitat while helping your company locate promising drilling sites, and *Manatee Hotline*, where your investigative work helps protect these large marine mammals from environmental threats.

You won't find racism, sexism, or ageism in these products. The guidebook accompanying each program provides an abundance of family- and classroom-oriented enrichment activities.

WORLD-WIDE EXPLORERS

Like the National Audubon Society, the National Geographic Society lends its environmental expertise to software products. A case in point is **Project Classify: Plants**, an Apple II multimedia courseware package for grades 4 to 8. In addition to a *How Plants Are Classified* filmstrip and audio cassette, the package includes a teacher's guide and 15 colorfully illustrated student booklets titled *The Botanist's Handbook*. This magazine-style guide to plant diversity teaches kids about growth, leaves, flowers, and fruits.

Students can play *The Botanist's Apprentice* computer game at any of three difficulty levels. Pay attention to clues, identify a mystery plant, and locate its habitat on the world map. In each of 72 such missions you must search for a flowering or nonflowering plant in a desert, forest, wetland, farmland, grassland, or town

ON-LINE ECOLOGY

If you'd like to reach out and touch someone and learn more about earth-saving issues at the same time, fire up your modem and log on to **EcoNet**, the international environmental computer network. According to Executive Director Bill Leland, schools use EcoNet as a primary resource in learning more about recycling efforts, climate changes, wildlife and rainforest preservation, toxic substances, and myriad other environmental concerns. When you "visit" EcoNet's on-line conferences, you can either read information or listen in on discussions among environmental educators and activists.

Leland notes that the 60 Macintosh-equipped U.S. regional centers of the Alliance for Environmental Education use EcoNet as their major network. Moreover, the EcoNet system is linked to partner networks in Canada, England, Sweden, the Commonwealth of Independent States, Australia, Brazil, and Nicaragua. As an example, Leland cites the Global Rivers Environmental Education Network (GREEN), which connects high-school students studying a particular watershed with other schools throughout the U.S. and around the world. GREEN helps students share results of water-quality projects in which they participate.

You don't have to have a Mac to use EcoNet; any computer with communications software will do. There's a one-time \$15 charge and a \$10 monthly subscription fee that's good for one free hour of off-peak connect time. Extra time costs just \$5 to \$10 per hour. For additional information, contact EcoNet at 18 De Boom Street, San Francisco, CA 94107, (415) 442-0220. — C.F.

environment. Each mission takes an estimated 5 to 10 minutes; the program can track the progress of up to 40 students.

Twelve reproducible worksheets focus on activities related to classifying plants and distinguishing their habitats, as well as making an herbarium (a plant scrapbook). A ready-to-personalize award certificate is also included.

FAUNA, TOO

If you enjoy playing global geography games such as those in Broderbund's Carmen Sandiego series, wait 'til you try **Eco Adventures in the Rainforest**, an interactive Mac program featuring realistic sound effects and graphics.

Chariot Software Group's extensively researched game — with accompanying resource guide, full-color poster, and *The Rainforest Book: How You Can Save the World's Rainforests* — not only increases knowledge of rainforest ecology but develops a deeper appreciation for issues such as animal poaching and clear cutting of tropical woodlands.

Chief Ranger Robert Nichols assigns your mission: to locate and photograph the rare barking deer of Malaysia, or another rainforest inhabitant. Exploring the forest is

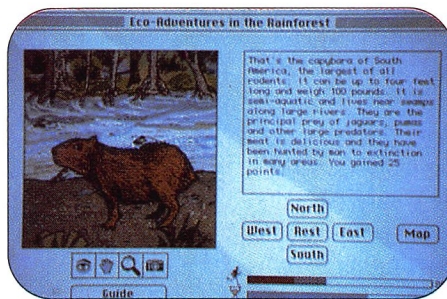
easy: Just click on the *North* button, for instance, to proceed in that direction. Your native guide provides hints about an animal's whereabouts or the proximity of poachers, rangers, and fellow researcher Glenda Gibbons. Four tools — eye, hand, magnifying glass, and camera — help you carry out your research.



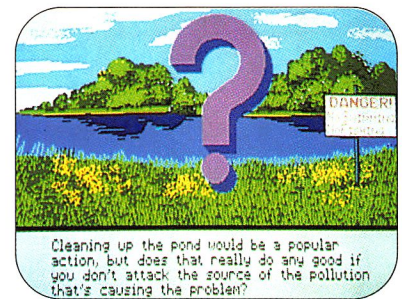
Eco Adventures lets young scientists track the inhabitants of the rainforest.

When you return from a mission (you can resume a saved game), a press conference is held at the ranger station. Rack up bonus points by answering five multiple-choice questions posed by the journalists.

We were disappointed by the program's lack of color (the tropical rainforest can be spectacularly colorful), but you could easily supplement this otherwise engrossing software package with an appropriate rainforest video or slide show.



Eco Adventures' realistic graphics and sound help kids learn about current issues.



Decisions' delicate balance: the bottom line vs. environmental health.

POLITICS, POLITICS

Whenever human beings stick their noses into things, controversy is sure to follow. That's the premise underlying **Decisions, Decisions: The Environment**, a "groupware" problem-solving simulation in Apple II and Mac versions from Tom Snyder Productions. It challenges your class (or teams within the class) to deal with a hypothetical environmental crisis: Snyder Pond is declared off-limits, thanks to pollution leaching into it, possibly from the town dump. Malaco Mining Company's garbage could well be at fault.

You're the mayor of the once-pristine town of Alpine, and everyone, it seems, is eager to offer advice. Naturally, your campaign manager has his own agenda, as do the environmentalist, the independent scientist, and the economist. Not all advice is wrong; then again, it's not all right, either. But you'll have to decide your priorities: Is it more important to protect the environment, get re-elected, preserve the town's economy, or keep expenses low?

As the program presents each dilemma, consult your advisers and come to a consensus. (The package includes 24 reference books.) Enter your choice and the computer presents the consequences. At the end of the game, it rates your performance based on priorities your group has set.

12 STEPS TO GREEN COMPUTING

Around the house, in the office, and at school there are literally thousands of things you can do to conserve Earth's resources. Even small efforts can produce exponential benefits. What can computer users in particular do to help save the planet? Plenty.

- **Invest in a compact fluorescent light bulb for your study or office.** Compact fluorescent bulbs may seem expensive at first (about \$10 to \$15), but they last ten times longer than ordinary incandescent light bulbs. Moreover, compact fluorescents use two-thirds less electricity for the same amount of light. Experts estimate that if everyone in the United States purchased and used just one compact fluorescent light bulb, each year we'd save energy equal to that generated by a nuclear-power plant. Many hardware stores stock compact fluorescent bulbs, but you can also order them by mail from companies such as **Jade Mountain** and **Real Goods**.
- **Avoid harsh or toxic cleaning agents in your classroom, home, or computer work area.** Debra Lynn Dadd's book **Nontoxic, Natural, & Earthwise** (Jeremy P. Tarcher, Inc., Los Angeles, 1990, ISBN 0-87477-584-1, \$12.95) is chock-full of suggestions for home-made alternatives to harmful commercial products. As a longtime sinus sufferer, I can vouch for natural cleaning products offered by **Seventh Generation**, an environmentally responsible mail-order firm.
- **Add green leafy plants to your office, study, or classroom.** A government study a few years ago showed that plants — especially popular ones like the spider plant — can cleanse the air of certain pollutants, such as carbon monoxide.
- **Incorporate recycled paper products into your desktop-publishing and other computing projects.** Mail-order paper merchants such as **Queblo Images** and **PaperDirect** offer a limited selection of recycled papers. **Atlantic Recycled Paper Company**, **Earth Care Paper**, **Print Power Services**, and **Recycled Paper Company** specialize in them.

- **Recycle waste paper.** Even the best-designed projects generate lots of scrap paper. Cut it up and use it for memo pads, bookmarks, and gift tags. Print draft copies on the back of old computer documents. Call local government agencies to find out how businesses and academic institutions in your community recycle perforation strips and other paper waste. Or write to **International Paper's Kraft Packaging Division** for the free brochure *Managing an Office Recycling System*.
- **Recharge laser-printer and personal-copier cartridges.** Not only do you save money, you help lessen the amount of plastic waste in our burgeoning landfills. Among the many recharging services that clean and refill cartridges with toner are **BlackLightning** and **LaserTech**.
- **Re-ink dot-matrix printer ribbons or refill used plastic cartridges with new nylon reloads.** **Computer Friends** sells the **MacInker** line of do-it-yourself ribbon-reinking machines. With a special adapter, you can re-ink four-color Image-Writer ribbons; it's not as messy as it sounds. Of course, you don't have to re-ink ribbons yourself; **The Ribbon Factory** will replace worn-out ribbons with fresh ones for you. Just send the company your old printer cartridges.
- **Gather used floppy disks, reformat them, and put clean labels on them.** Or ship them to **Covenant Recycling Services**. At press time, the company was paying 3¢ for each 5.25-inch disk and 6¢ for each 3.5-inch disk. You receive half the proceeds of resale. The remaining half is donated in your name to the Children's Defense Fund, March of Dimes Birth Defects Foundation, Partners for Disabled Youth, or Special Olympics International. (You select the organization.) To buy Covenant's recycled disks, contact **Electronic Liquidators**. Current prices are \$35 for a pack of 50 3.5-inch high-density disks; \$66 for 100; \$18 for a

Besides some 300 possible paths through the simulation, there's plenty of grist for the environmental discussion mill in the Decisions, Decisions teacher's guide, with its numerous lesson plans and worksheets — printed on recycled paper, no less. Topics include air pollution, toxic waste, land reclamation, and incineration. But the final emphasis is on analyzing conflicting information, making tough decisions, and understanding outcomes. It's this "no easy answers" approach to education that makes Tom Snyder Productions one of our favorite publishers.

IN SEARCH OF FUN AND LEARNING

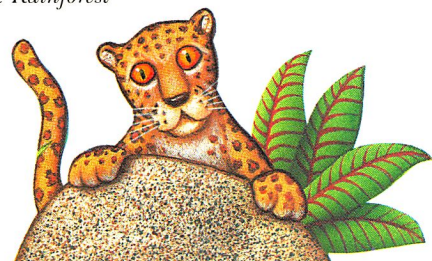
Few people would argue against the notion that exploring scientific topics "free-style" is a lot more enticing than approaching science as a rigid discipline or the exclusive domain of dweebs. That's no problem with **Earthquest Explores Ecology**, developed by Earthquest Inc. of Palo Alto, California, and distributed by Davidson & Associates. Thanks to this Mac program's HyperCard personality (version 2.1 is included), children aged 10 and up, as well as adults, will enjoy Earthquest's multifaceted approach to environmental science. The program is so wonderfully comprehensive that it immediately impressed this once-

upon-a-time botany teacher. What'll impress kids is Earthquest's appealing interface. Besides, Earthquest is funny: "Only hug a porcupine from a distance," the program warns.

Perhaps what we like best about Earthquest is the program's list of varied activities. You can click on any of dozens of topic buttons in the *EcoExplorer* module, for instance, to learn about climate, biomes (large geographic ecosystems), adaptations, food webs, and the earth's cycles. Many of these mini-lessons, which you'll find age appropriate as well as scientifically accurate, include beautiful illustrations, animated demonstrations, wildlife sounds, and even "splashes" of color.

Although Earthquest provides information about flora and fauna in nine ecosystems — including desert, aquatic, and polar environments — the program's developers devoted considerable effort to the *Rainforest Explorer* module in particular. Kids will discover that this biome is like a living pharmacy. Rainforest plants and animals provide us with a range of medicines and cancer-fighting agents.

But Earthquest isn't just a fancy



pack of 100 5.25-inch double-density disks; \$36 for a pack of 100 3.5-inch double-density disks, \$19 for 50. Another source of recycled disks is **Softdisk Publishing**, which has distributed some 100,000 disks since inaugurating its campaign last summer. Blank disks sell for \$9.95 per package (25 3.5-inch or 50 5.25-inch disks).

- **Invest in a battery recharger.** That way you can recycle nicad batteries for use in devices such as answering machines, amplified computer speakers, and desktop calculators.

- **Better yet, use a solar-powered calculator.** **Curtis Manufacturing's** nifty calculator attaches directly to your computer keyboard or CPU (central processing unit). The AppleWorks spreadsheet's great for number crunching, but — let's face it — a spreadsheet's overkill for most everyday math tasks.

- **Save gas and pollute less.** Use your telephone, fax machine, or modem to order products, communicate with other computer users, or research the information you need for your next school report. Many on-line services offer shop-at-home options as well as E-mail (electronic mail) — not to mention specialized databases and general references such as the Grolier Electronic Encyclopedia.

- **Take a HyperCard IIgs tour.** Last fall I designed **EnviroStack**, a HyperCard IIgs stack that, among other things, presents information about environmental books, magazines, organizations, electronic networks (bulletin-board systems), and computer software. It also offers tips for saving energy around the house and a small database of companies that sell environmentally sound products. I've donated EnviroStack to the public domain, so check first with HyperCard IIgs-using friends who can give you a copy. Or send a formatted 3.5-inch disk, a pre-addressed mailing label, and \$2 for postage and handling to **C.E. Field**

COMPANY INFORMATION

Atlantic Recycled Paper Co.
P.O. Box 39096
Baltimore, MD 21212
(301) 323-2676

BlackLightning Inc.
Riddle Pond Road
West Topsham,
VT 05086
(800) 252-2599

Computer Friends
14250 NW Science
Park Drive
Portland, OR 97229
(503) 626-2291

Covenant Group
P.O. Box 759
Butler, NJ 07405
(201) 838-1336

Curtis Manufacturing
30 Fitzgerald Drive
Jaffrey, NH 03452
(603) 532-4123

Earth Care Paper
P.O. Box 7070
Madison, WI 53707
(608) 277-2900

Electronic Liquidators
33 Washington St.
Melrose, MA 02176
(617) 662-9363

International Paper Kraft Packaging
International Place I
6400 Poplar Ave.
Memphis, TN 38197
(901) 263-6000

Jade Mountain
P.O. Box 4616
Boulder, CO
80306-4616
(303) 449-6601

LaserTech
35 Prosper St.
Providence, RI 02904
(401) 421-7411

PaperDirect
205 Chubb Ave.
Lyndhurst, NJ
07071-0618
(201) 507-5488

Print Power Services
418 West Jefferson
Auburn, IL 62615

Queblo Images
131 Heartland Blvd.
P.O. Box 1322
Brentwood, NY
11717-0698
(516) 254-2000

Real Goods
966 Mazzoni St.
Ukiah, CA
95482-3471
(707) 468-9214

Recycled Paper Co.
P.O. Box 3597
Quincy, CA 95971

The Ribbon Factory
2300 East Patrick
Lane #23
Las Vegas, NV 89119
(702) 736-2484

Seventh Generation
14 Hercules Drive
Colchester, VT
05446-1672
(802) 655-3116

Softdisk Publishing
P.O. Box 30008
Shreveport, LA
71130-0008
(800) 831-2694

Enterprises, 60 Border Drive, Wakefield, RI 02879-3802. Left-over proceeds from the distribution of this disk are donated to the **Programme for Belize** (508-693-0856), an organization dedicated to saving the Central American rainforest. (EnviroStack requires HyperCard IIgs; version 1.1 is recommended.)

— C.F.

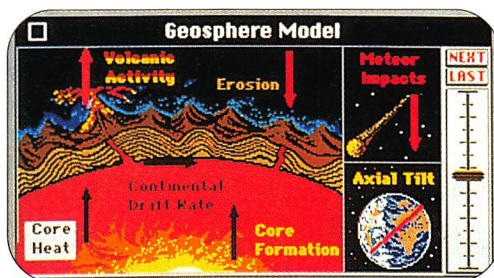
package of facts and figures. Six activities in the program's *Ecosimulator* module let you test your own hypotheses about population growth, natural community interactions, and the effects of human interference. And don't pass up the *Wild Thing Sound Studio*, where you'll use sounds from nature, including various animals, to compose music. A jaunt in the *Carrot Cruiser* transports you to Earthquest's games, which include arcade action, mazes, and even *Concentration*-style matching activities.

Is Earthquest perfect? Nah. A couple of text fields contain apostrophe errors, subscripts in chemical formulas are sometimes inconsistent, and some explanations of plant growth seem just a little too anthropomorphic. But these are minor grievances. Earthquest gets our enthusiastic endorsement. If you, your children, or your students want to learn more about the earth's ecosystems and issues such as slash burning, the greenhouse effect, and personal environmental action, discover Earthquest Explores Ecology. Many pleasant surprises await you.

GLOBAL EVENTS

If you'd like to experiment with the whole ball of wax, so to speak, start up your Mac and spend an eon or two playing **SimEarth** — the planetary simulation inspired by James Lovelock's Gaia hypothesis, a way of looking at the earth as a self-regulating organism. Trigger an event such as a volcanic eruption and all systems of the earth respond.

Select any of seven SimEarth-scenario planets: Your mission on *Aquarium* is to build continents and help



SimEarth demonstrates the interdependence of all our planet's natural and manmade systems.

civilization evolve; *Stag Nation's* stuck in the Stone Age, while *Cambrian Earth's* devoid of intelligent life, and *Modern Day Earth* only seems to be up to date; your missions on *Mars* and *Venus* are to make these planets habitable for human beings; *DaisyWorld* lets you explore the Gaia model more directly.

If you run out of challenges, create your own planet from scratch. Populate it with SimEarthling species and apply a few biological, chemical, geological, and human rules. If you can control evolution, food supplies, energy, earthquakes, wars, technology, and pollution, among other things, you've got the "creation thing" down pat. The program manual calls SimEarth a "software toy." The documentation's tongue-in-cheek style underscores that point. Nevertheless, if SimEarth's a toy, it's one with far-reaching implications.

FERTILE MINDS

Whether you're trying to teach kids to respect other people or to care for Mother Earth, demonstrating love usually works a lot better than instilling fear. Learning about environmental issues should be a happy, fulfilling experience for both student and teacher; maybe all it takes is an Apple computer and programs like these. Despite all the news hype and sometimes-highfalutin environmentalism, good earthkeeping can be fun, too. □

CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE'S THE AUTHOR OF PRESS ROOM, *INCIDER/A+*'S COLUMN ON DESKTOP PUBLISHING. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

PRODUCT INFORMATION

Audubon Wildlife Adventures:
Grizzly Bears
Audubon Wildlife Adventures: Whales
Advanced Ideas
2902 San Pablo Ave.
Berkeley, CA 94702
(415) 526-9100
128K Apple II
512K GS
discontinued
mail-order sources only

Decisions, Decisions:
The Environment
Tom Snyder Productions
90 Sherman St.
Cambridge, MA 02140
(800) 342-0236
(617) 876-4433
\$119.95
\$199.95 lab pack
\$349.95 Mac network
64K Apple II/1MB Mac

Earthquest Explores Ecology
Earthquest
125 University Ave.
Palo Alto, CA 94301
(800) 556-6141
(800) 545-7677
(310) 793-0600
(310) 793-0601 fax
\$59.95 consumer
\$89.95 school
\$269.95 lab pack
1MB Mac
2MB recommended
requires System 6.0.5
or later
System 7.0 compatible
requires hard drive

Eco Adventures in the Rainforest
Chariot Software Group
3659 India St. #100
San Diego, CA 92103
(619) 298-0202
\$49.95/\$59.95 color
\$119.95 lab/
\$139.95 color

\$79.95 school/
\$94.95 color
1MB Mac
requires two disk drives
or hard drive
requires hard drive
for sound effects

Exploring Tidepools
Wings for Learning
1600 Green Hills Road
P.O. Box 660002
Scotts Valley, CA 95067
(800) 321-7511
(408) 438-5502
\$75
\$300 network
128K Apple II

Food Chains
MCE/Lawrence Productions
1800 South 35th St.
Galesburg, MI
49053-9687
(800) 421-4157
(616) 665-7075
\$59.95
64K Apple II

Kid-Leidoscope Newzine
MindPlay
3130 North Dodge Blvd.
Tucson, AZ 85716
(800) 221-7911
\$79/5 issues
\$200 lab pack/5 issues
48K Apple II

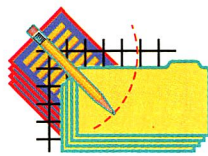
Project Classify: Plants
National Geographic
Computer Courseware
P.O. Box 98019
Washington, DC 20090
(800) 368-2728
(301) 921-1330
\$49.95
128K Apple II

Science 1: The Environment
Ellen Nelson
Learning Library
Decision Development Corp.
2680 Bishop Drive
Suite 122
San Ramon, CA 94583
(415) 830-8896

\$49.95
64K Apple II

Science Explorers: Plants
Scholastic Software
2931 East McCarty St.
P.O. Box 7502
Jefferson City, MO 65102
(800) 541-5513
\$24.95
\$129.95 teacher
128K Apple II

SimEarth
Maxis Software
2 Theatre Square
Suite 230
Orinda, CA 94563-3041
(800) 33-MAXIS
(510) 254-9700
(510) 253-3736 fax
\$69.95
1MB Mac
2MB recommended
for color
requires System 6.0.2
or later



APPLEWORKS IN ACTION

TAKING STOCK 2

AppleWorks offers a variety of techniques to make everyday stock tracking easier and smoother.

By RUTH K. WITKIN

IF MR. SPOCK SOLD STOCKS, WOULD you buy from him? Probably so — knowing his track record of consistently logical conclusions based on careful technical analysis. But you'd still want to weigh his judgments against your own informed opinions. To do that, you'd need a solid understanding of what it takes to make sound financial investments.

KEEPING TRACK

Last month you created a portfolio spreadsheet of sample stocks ("Taking

Stock 1," March 1992, p. 38). Formulas in the spreadsheet calculate gain or loss per share and dollar and percentage change, then total and average the original and current values of the portfolio. If you already own stocks, this is the place to keep track of how they're faring.

This month you'll finish the spreadsheet and learn to manipulate it in various ways. (If you missed "Taking Stock 1," contact the *inCider/A+* editorial department at 80 Elm Street, Peterborough, NH 03458, 603-924-0100, for a reprint.)

Now load AppleWorks and bring the *PORTFOLIO* spreadsheet to the desktop.

The *Review/Add/Change* screen appears, with the cursor in cell A1. Pick up where you left off by entering the last two formulas. For cell locations, remember to refer to last month's spreadsheet (not the *Figure* below).

FORMULA 9: Total Sells. Formula 9 adds the number of shares sold (D26 through D25) and enters the total sold in D28.

Cell location: D28

Formula: @SUM(D27.D24)

FORMULA 10: Average Sells. Formula 10 averages the number of shares sold (D26 through D25) and enters the average amount sold in D29.

Cell location: D29

Formula: @AVG(D27.D24)

Protect Formulas 9 and 10 as you did the others last month: With the cursor on D28, press OA-L, type **B** for *Block*, move to D29, press Return, and type **PN**.

PORTFOLIO ANALYSIS											
LATEST REVISION DATE: Mar 1 92											
***** B U Y S *****											
Company or Fund	Symbol	Exch	Shares	Price per Share	Total Cost	Price per Share	Gain/Loss per Share	Total Value	Dollar Change	Percent Change	Dividend per Share
ALASKA MINING	ALM	OTC	1,000	\$3.75	\$3,750.00	\$6.25	\$2.50	\$6,250.00	\$2,500.00	66.67%	\$1.10
COMPUTERS UNLIMITED	COU	AMEX	200	\$22.00	\$4,400.00	\$21.62	(\$.38)	\$4,324.00	(\$76.00)	-1.73%	\$0.00
EERO METALS	EEM	OTC	500	\$13.75	\$6,875.00	\$15.00	\$1.25	\$7,500.00	\$625.00	9.09%	\$0.00
FAST COURIER INC	FCI	AMEX	1,000	\$11.75	\$11,750.00	\$18.50	\$6.75	\$18,500.00	\$6,750.00	57.45%	\$0.25
GENERAL CORP	GCO	NYSE	1,000	\$47.87	\$47,870.00	\$49.75	\$1.88	\$49,750.00	\$1,880.00	3.93%	\$0.00
HENLEY MFG	HEN	OTC	2,000	\$3.50	\$7,000.00	\$6.37	\$2.87	\$12,740.00	\$5,740.00	82.00%	\$0.00
KEEL SOFTWARE DESIGN	KES	NYSE	500	\$20.00	\$10,000.00	\$24.50	\$4.50	\$12,250.00	\$2,250.00	22.50%	\$0.00
MERLIN FUND	MER	AMEX	1,000	\$11.75	\$11,750.00	\$18.50	\$6.75	\$18,500.00	\$6,750.00	57.45%	\$0.25
TOTALS			7,200	\$134.37	\$103,395.00	\$160.49	\$26.12	\$129,814.00	\$26,419.00	297.35%	\$1.60
AVERAGES			900	\$16.80	\$12,924.38	\$20.06	\$3.27	\$16,226.75	\$3,302.38	37.17%	\$0.20
***** S E L L S *****											
Company or Fund	Symbol	Exch	Shares	Price per Share	Total Cost	Price per Share	Gain/Loss per Share	Total Value	Dollar Change	Percent Change	Dividend per Share
ATLANTIC POWER	APOW	NYSE	1,000	\$34.33	\$34,330.00	\$42.00	\$7.67	\$42,000.00	\$7,670.00	22.34%	\$2.00
STAG FIBER OPTICS	SFO	OTC	750	\$4.25	\$3,187.50	\$6.25	\$2.00	\$4,687.50	\$1,500.00	47.06%	\$0.55
ABRACADABRA INC	ABR	NYSE	200	\$23.83	\$4,766.00	\$21.00	(\$2.83)	\$4,200.00	(\$566.00)	-11.88%	\$0.00
TOTALS			1,950	\$62.41	\$42,283.50	\$69.25	\$6.84	\$50,887.50	\$8,604.00	57.53%	\$2.55
AVERAGES			650	\$20.80	\$14,094.50	\$23.08	\$2.28	\$16,962.50	\$2,868.00	19.18%	\$0.85

Figure. Completed portfolio spreadsheet with sample entries.

Copy the formulas from D28 and D29 to E28 through O29: Place the cursor on D28, press OA-C, and hit Return. Move the cursor to D29 and hit Return again. Move to E28, type a period, move to O28, and hit Return once more.

Press OA-R to tell AppleWorks that all cell references are *relative*. Now copy both formulas in almost the same way to R28 and R29, then V28 and V29. This time there's no need to type the period.

Copying from D28 and D29 gave the other cells *Commas* format. Use OA-L to reformat E28 through J29, L28 through L29, N28 through R29, and V28 through V29 for *Standard* (dollars with 2 decimal places), then reformat K28 through K29 and M28 through M29 for *Percent* with 2 decimal places.

PRINTING THE SPREADSHEET

The portfolio spreadsheet is 209 characters wide. You can print everything on two pages by using 15 characters per inch: Press OA-O to bring up the *Printer Options* screen. Type **CI** (for *Chars per Inch*) and press Return. Type **15** and hit the return key again.

All other print settings remain at AppleWorks standards, so press OA-S to store everything on disk and return the spreadsheet to the screen.

Now turn on your printer. AppleWorks

prints all columns that fit on the first page, then prints leftover columns on the second page.

Press OA-P to start the *Print* command and hit Return to confirm *All*. Select the printer, type a report date or, if your computer has a built-in clock, type **@** (the *at* sign), and hit Return twice, the second time to confirm *one* copy. The printer whirs away, rolling out both pages of the portfolio spreadsheet.

TRICKS OF THE SPREADSHEET TRADE

Now that the spreadsheet is complete, you should know about certain techniques that can make everyday stock tracking easier and smoother. For instance, you can "anchor" titles so that they stay on screen as you scroll through the spreadsheet, letting you make entries in the right cells.

You can also arrange and rearrange stocks to keep them in meaningful order, insert rows in the *BUYS* section for new stocks, and move sold stocks to the *SELLS* section. The accompanying **Figure** shows the results of such changes. Let's look more closely now at these techniques.

WINDOWS ON THE PORTFOLIO WORLD

When a spreadsheet is as wide as this one, keeping the names in column A on

the screen while you change entries is a must. Suppose the *Abracadabra* company decided to do away with its dividend. You'd move the cursor to column L (*Dividend per Share*). Whoops! Which one is the *Abracadabra* cell? It's windows to the rescue.

To see how windows work, place the cursor on any cell in column B (B1, for instance) and press OA-W to start the *Windows* command. Hit Return to confirm *Side by side*.

Instantly, AppleWorks divides the screen into two windows, the left showing column A (the company names), the right showing columns B through F.

Now to change the dividends, press OA-Right Arrow three times to bring column L into view in the right window. Place the cursor on L13, type **0** (zero), and hit Return. Easy.

You can jump between windows just as easily. Press OA-J to hop into the left window. Windowing is an interesting phenomenon: Each window contains the entire spreadsheet.

Press Right Arrow several times to see the spreadsheet in the left window scrolling to the right. Then hold down Left Arrow until column A shows in the window again.

Now press OA-J to return to the right window. Press OA-Left Arrow three times to display column A in both windows. Press OA-W and confirm *One* to reunite the windows.

The *Windows* command can also anchor titles across the screen. This is handy when you're making entries down a column and need to keep the headings in view.

Place the cursor on A5 and press OA-W. Type **T** (for *Top and bottom*). Now move the cursor down as the latest revision date in row 3 stays on screen. Press OA-W and confirm *One* to reunite the windows.

You can save a spreadsheet with a second window open, and the next time you load the spreadsheet both windows will still be open. The printed spreadsheet, however, will show no trace of a second window.

SORTING THE STOCKS

The portfolio spreadsheet can be more meaningful if you keep stocks in alphabetical order instead of by purchase date, as you're likely to enter them.

To see how this works, place the cursor

=====M=====N=====O=====P=====Q=====R=====S=====T=====U=====V=====						
=====						
-----] [-----HISTORY-----]						
Percent Yield	52-Week Low	52-Week High	Buy Date	Buy Commission	Dividend Date	Certificate Location
17.60%	\$3.00	\$6.25	Mar 25 87	\$90.00	Feb 10 90	Broker
0.00%	\$21.62	\$31.75	Feb 9 92	\$13.00		Broker
0.00%	\$12.00	\$21.00	Dec 23 91	\$13.00		Safe deposit
1.35%	\$9.75	\$18.50	Jun 21 85	\$23.00	Nov 23 89	Safe deposit
0.00%	\$45.00	\$53.50	Jun 21 91	\$47.00		Safe deposit
0.00%	\$3.50	\$6.37	Jan 7 87	\$20.00		Broker
0.00%	\$17.25	\$24.50	Jan 10 88	\$7.00		Broker
1.35%	\$9.75	\$18.50	Jun 21 85	\$23.00	Nov 23 89	Safe deposit
20.30%	\$121.87	\$180.37		\$236.00		
2.54%	\$15.23	\$22.55		\$29.50		
-----] [-----HISTORY-----]						
Percent Yield	52-Week Low	52-Week High	Buy Date	Buy Commission	Sale Date	Sale Commission
4.76%	\$30.00	\$42.00	Oct 17 89	\$62.00	Dec 5 91	\$190.00
8.80%	\$3.00	\$6.25	Aug 23 89	\$90.00	Feb 15 92	\$22.50
0.00%	\$19.75	\$30.00	Jun 26 89	\$47.00	Mar 1 92	\$15.00
13.56%	\$52.75	\$78.25		\$199.00		\$227.50
4.52%	\$17.58	\$26.08		\$66.33		\$75.83
=====						

APPLEWORKS IN ACTION

on A9 and hit OA-A to start the *Arrange* command. Move the cursor to row 16 to highlight only the company names, and hit Return again.

AppleWorks proposes to arrange *Labels from A to Z* based on the contents of column A. This is just what you want, so hit Return. Voilà — a perfect alphabetical arrangement. Press OA-S to store it.

You can also arrange stocks by exchange, symbol, or other useful criterion. To avoid an on-screen hodgepodge, be sure to highlight only data rows (not lines or blank rows, for example) before arranging.

Bear in mind that once you arrange and save the spreadsheet, you can't rearrange it automatically by purchase date: AppleWorks can't read dates in the spreadsheet. You can rearrange it manually, however, by moving rows to the clipboard and back into the spreadsheet.

Another approach to ordering by date involves setting up a database and moving spreadsheet data there for sorting, then moving it back to the spreadsheet.

ENTERING "BUYS"

The best way to insert rows for new purchases is to copy an existing row containing formats and formulas to the clipboard, copy it back into the spreadsheet, and overtype the entries.

Here's how to insert a row in the *BUYS* section: Place the cursor on A16 and press OA-C. Type **T** (for *To clipboard*) and hit Return twice (to confirm *Rows* and the individual row).

The row is now on the clipboard. Leave the cursor where it is and press OA-C again. This time, type **F** (for *From clipboard*) and hit Return to confirm *Formulas and values*.

Until you put something else on the clipboard or quit AppleWorks, you can copy this row from the clipboard as many times as you want. AppleWorks will adjust cell references in the SUM and AVERAGE formulas to reflect the new entries.

Now press OA-E to activate the overtype cursor (a flashing rectangle) and enter **FAST COURIER INC** in A17 and **FCI** in B17. Type whatever entries make sense to you in the rest of the input cells for the new stock: columns C through E (*Exchange, Shares, and Original Price per Share*), G (*Current Price per Share*), L (*Dividend per Share*), and N through V (*52-Week Low, 52-Week High, Buy Date, Buy Commission, Dividend Date, and Certificate Location*).

To put *FAST COURIER* in alphabetical order, arrange the stocks by name once more: With the cursor on A17, press OA-A, move the cursor up to row 9, and

hit Return again. Press Return to confirm *Labels from A to Z*.

MOVING "SELLS"

After you sell a stock, just use the clipboard to move the row from the *BUYS* section to the *SELLS* section.

Suppose you sell the *Abracadabra* stock. Here's how to handle this transaction on your spreadsheet: Place the cursor on A9 and press OA-M to start the *Move* command. Choose *To clipboard* and hit Return twice to confirm *Rows* and the *Abracadabra* row.

Because cells in this row are protected, AppleWorks issues a warning that you're about to remove protected cells. This is of no consequence, so simply type **Y** (for *Yes*). The spreadsheet returns with the *Abracadabra* row gone!

Now place the cursor on A27 and press OA-C. Choose *From clipboard* and hit Return to confirm *Formulas and values*. Instantly, *Abracadabra Inc* joins its purged brethren in the *SELLS* section.

All you need to do now is overtype two of the existing entries with new ones: In T27 enter **Mar 1 92**, and in V27 enter **15**. Press OA-S to store the spreadsheet on disk.

A few final words: You may want to add columns to keep track of each company's prime product or service, special events such as stock splits or (shudder) Chapter 11s, as well as capital-gains implications and other items of interest. Do this by simply adding entries after column V.

SNEAK PREVIEW

Are you ready for more organization in your personal life? Coming up next time is a database for keeping track of those all-important family documents. See you then. □

ITERATION UPDATE

In my recent project-cost-estimate spreadsheet ("Fair Estimates," September and October 1991, pp. 49 and 48, respectively), I explained how to use *iteration* to solve a which-came-first-the-chicken-or-the-egg problem.

During iteration, one formula uses the calculation of another formula that's responding to the first formula's calculations. As these formulas whirl on a merry-go-round of computations, they draw nearer and nearer to the solution of some mathematical problem. AppleWorks, unlike many other worksheets, can't iterate formulas automatically; you must do it manually. In the project-cost-estimate spreadsheet, that means pressing OA-K 17 times.

R.W. Bennett of Solon, Ohio, has provided a much easier way: He's redone the formulas to eliminate any need for iteration. The accompanying **Figure** shows the cells involved; note that *Estimate to Client* and *Profit Margin* have swapped lines. Here are the formulas:

H3: +M24

H4: +H3/(100-G5)/100

H5: +H4-H3

This approach is much simpler and works far better. I urge all of you to replace the formulas in these cells now with the new ones. — R.W.

	D	E	F	G	H	I
1	PROJECT COST ESTIMATE					
2						
3	Total Project Cost			\$7,506.51		
4	Estimate to Client			\$12,510.86		
5	Profit Margin (%)	40.0		\$5,004.34		
6						
7						
8						

Figure. Noniterative formulas replace iterative formulas in this area of project-cost-estimate spreadsheet.

CONTRIBUTING EDITOR RUTH K. WITKIN IS THE CREATOR OF THE *SUCCESS WITH APPLEWORKS* TEMPLATE SERIES AND *RUTH WITKIN'S MONEY MANAGER* (BOTH FROM A+ PUBLISHING/IDG COMMUNICATIONS), AND *RUTH WITKIN'S BEST NEW APPLEWORKS TEMPLATES* (QUALITY COMPUTERS). SHE'S THE AUTHOR OF *THE BEST BOOK OF APPLEWORKS AND PERSONAL MONEY MANAGEMENT WITH APPLEWORKS*. WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. ENCLOSE AN SASE IF YOU'D LIKE A REPLY.

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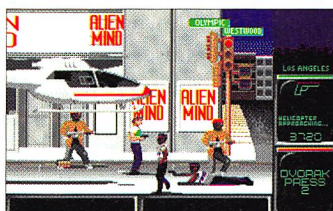
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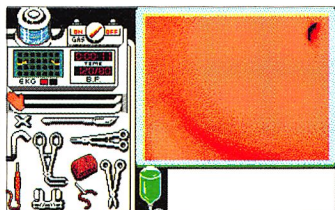
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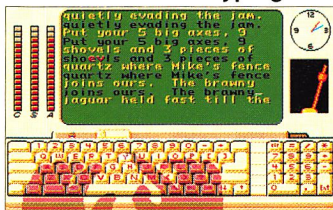
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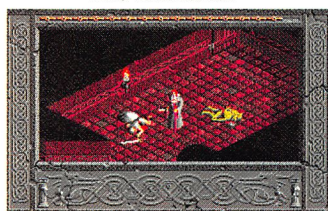
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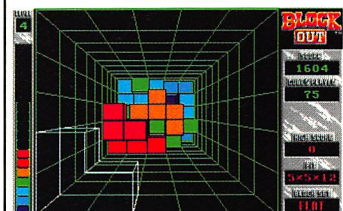
Crystal Quest™: Your job is to collect all the crystals while avoiding mines, bullets, and 12 different kinds of nasties which chase you through more than 40 different waves! There are nasties that hide in corners and gush bullets like a hail storm. There are nasties that come at you like a cruise missile. Warning: This is a *very* addictive game. **Product number CG50 is only \$20.**

Fun & Games 3-Pack



Fun & Games 3-Pack: **Airball** by Michtron is a blast. You need to maneuver a balloon through a maze of spikes and other sharp objects. **GBA Basketball** by Activision lets you take the court in two-on-two action. **Fire Power** by Microillusions is a tank battle game in which the object is to capture the other player's flag. To get all 3, **Order product number BR52 for only \$44.**

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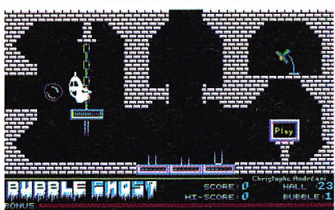
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enticing — it makes it easy to play a hole or two as a quick break from work.

This game plays realistically and looks great. Fairways, greens, hazards, bunkers, and ever-present trees aren't digitized, but they're still realistic enough to suspend your disbelief and put you into the right frame of golfing mind.

PGA Tour Golf fits comfortably into the golf-simulation pantheon. Good-looking color screens, reasonable speed even on a Mac LC, and constant pressure to beat the pros' scores make for a winning combination. The courses challenge even the best computer golfer: Try the infamous 17th hole at Sawgrass or PGA West; the green is an island in the middle of a lake linked to the shore by a narrow causeway. There's enough variety here to keep you coming back to the links for yet another run for the prize money. When's the next tee time?

GALAXIES UNKNOWN AND UNTOLD

OIDS steals from games long gone. As in Defender, you fly a ship across a horizontal landscape, blasting enemies out of the sky and retrieving the helpless from the ground below. As in Asteroids, your ship has forward thrusters only, so you have to swivel and retrofire to slow your progress.

But OIDS adds to the gaming catechism, too. Mountains may rise from the surface, but you'll have to circumnavigate asteroid-like islands in the sky as well. Caverns deep underground can be reached only through treacherous tunnels. And an editor lets you make up new galaxies whenever you want.

Controlling your ship isn't easy. You'll be best served by heading to Novoids, the simplest of the six galaxies included with the game, so that you can practice in relative peace. The object — such as it is — of OIDS is to pick up androids from the surface after you've blasted open their jails. Along the way you must avoid the twisting terrain, obliterate the Biocrete bases, vaporize the Biocrete armada, and ultimately return to your mothership for refueling before heading to the next planetoid, or level.

You'll see more than a few of your ships explode in flames when they crash. Keep at the controls — keyboard works best, another indication of this game's blast-

from-the-past style — and you'll learn how to turn on your shields, pivot gracefully, and even land gently to take in OIDS. You're armed with cannon-like photon guns that fire from the nose of your V-wing, and with "novabombs" that destroy almost everything nearby.

Shields protect you from enemy fire (both ship- and ground-based), and from collisions with the ground. You pay a price for the protection, of course (nothing's free, especially in a game), for shields eat away at your fuel levels. To fill your tanks, you need to return to the mothership or steal some from the unwary Biocrete depots that are scattered here and there.

What's missing from OIDS, something absolutely necessary in arcade games like Defender, is some way to see beyond the immediate screen. Defender handed you radar that miniaturized the entire landscape and warned you of impending doom. No such luck in OIDS. Maybe it would steal some of OIDS' charm, but you should have the option nonetheless.

IN A CAVERN, IN A CANYON

It's easy to lose track of time with OIDS. Once you get past the early frustration of piloting, you'll want just one more chance — just one more. In fact, you can spend hours simply playing (though *simply* may be the wrong word, since some of OIDS' galaxies are mind-numbing in their difficulty). But then, you'd miss the best part of OIDS. Like Loderunner, another old game on the Macintosh, OIDS gives you the tools you need to make new levels. And those tools make game creation a snap.

Launch the editor and you'll see an empty palette. Create the terrain, place the Biocrete bunkers, set down the OIDS pods, specify the general difficulty of the galaxy, and run some tests to see how tough it is. You can spend as little as a quarter hour, or untold hours, making up new challenges for OIDS.

Or you can play what others generate. On America Online, for instance, generous players have uploaded more than a score of OIDS games. Most take only a minute or two to download.

Don't look to OIDS' meager documentation for much help. It sets the stage and gives you the basics (as well as outlines the beginnings of your first game-editor

creation), but it won't tell you how to get through Cosmoids. That you have to do on your own. And even though Mac owners have a nasty reputation as game pirates, the on-disk copy protection is lamentable. You can install OIDS on your hard-disk drive, but you need to either register the game and wait weeks for a software key, or keep the master disk handy. Either alternative is awkward at best.

OIDS works under System 7, but version 1.0 has a nasty habit of locking up the computer when you pause it and try to switch to another active application in memory. (I downloaded the version 1.2 updater from America Online, and that fixed the problem. Check that you're buying the most recent version before you plunk down cash.)

On a Macintosh LC, OIDS uses color discreetly, mostly in explosions. In black-and-white, OIDS is a grand game on the old Mac Plus (or its successor, the Macintosh Classic).

OIDS is an old-style arcade game that uses its roots well. There may not be much new here, but with the editor, you can make as much new as you want. If only you could make those pathetic little OIDS stop waving.

Gregg Keizer
Eugene, OR

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REVIEWS

In its earliest versions, AppleWorks' three modules — word processor, spreadsheet, and database manager — had extremely limited capabilities. The word-processing program didn't have a spelling checker; the spreadsheet module couldn't display large numbers, and the databases were limited to flat-file (nonrelational) file-card storage. In most aspects the database is AppleWorks' most-limited function, but it's also one of the most useful simply because it's so easy to operate.

Since AppleWorks' original release, many add-on programs have appeared, tacking on functions or smoothing out rough spots. The latest of these, Total Control from JEM Software, takes aim at the database module. It extends the database manager's capabilities, adding glossaries, automatic default inputs, masks, calculations, and "links" to word-processor files to create large fields.

AppleWorks 3.0, the first all-Clarix version, was designed as a "patch friendly"

program. Programmers can add their own extensions with minimal changes to the core modules. The primary benefit of this arrangement is that you can use many different enhancements without worrying about incompatibilities among them.

The most important thing to remember about AppleWorks enhancement products is that there's nothing wrong with using them. Don't feel as though you're doing something sneaky or be concerned that you're going to void any warranties. On the other hand, there's no practical way Clarix can support dozens of different third-party patches, so don't expect the company to be able to assist you with any problems. Clarix has recognized, and to a limited degree even supports, developers who produce enhancements for AppleWorks.

As a general rule, AppleWorks enhancements come in three categories: utilities you run before AppleWorks and that load AppleWorks automatically after you install them (such as Beagle Bros' TimeOut UltraMacros); other TimeOut utilities that run under Beagle Bros' shell; and products that modify the AppleWorks system program (such as Beagle Bros' Super AppleWorks Enhancer and JEM's Outliner). Total Control from JEM Software falls into the final category.

You can install Total Control before or after any TimeOut products or other AppleWorks patches. The only known incompatibility is with Applied Engineering's Super AppleWorks Desktop Expander, but with AppleWorks 3.0 supporting virtually all current memory-expansion boards, the Applied Engineering patch should be unnecessary.

The Total Control patch program installs a set of INITs, small programs that run when your system is first loaded, in their own subdirectory on your AppleWorks program disk. Because Total Control installs additional files, use a high-density storage device (such as a hard drive or 3.5-inch disks). If you're still using 143K 5.25-inch floppies, you'll need a separate disk for the INITs.

In addition, you'll have to delete the AppleWorks word-processor file from your database disk to make room for Total Control. The Total Control manual recommends setting up a separate

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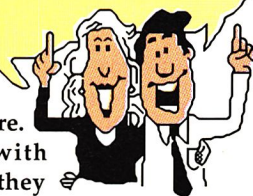
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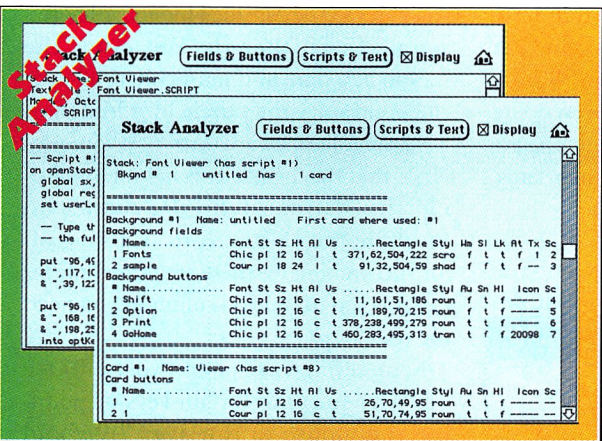
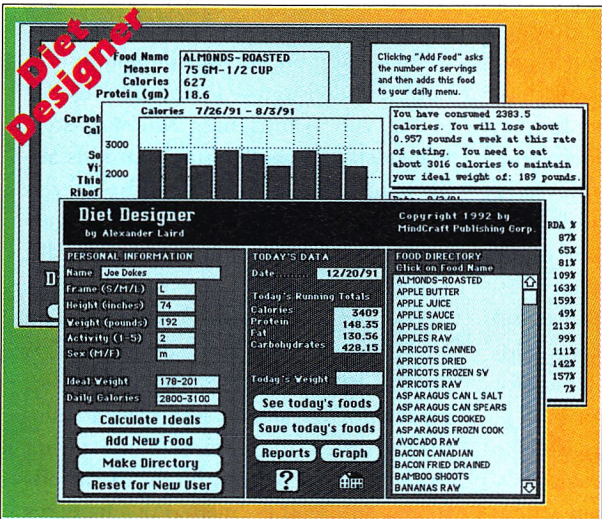
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RUN A TIGHT SHIP

Total Control not only bombards you with tons of goodies, but also hits hard with every volley. These new features have real depth that takes them out of the cosmetic doo-dad category and into the power-user realm.

For instance, using Total Control's rules and "data masks," you can closely control what type of data goes into each field and in what format it appears. You can specify text only, numbers only, minimum/maximum length, minimum/maximum numbers, and so on; data masks specify how input is formatted.

A typical mask application would be a phone number or Social Security number (such as 212-555-1212 and 123-45-6789, respectively). Masks are useful when you want to make sure you don't type in an incorrectly formatted number; they can restrict the flexibility of adding a comment to a field, however. For example, if you use a phone-number mask, you'll have to type in an area code for each number, including local numbers and long-distance numbers within your area code; you can't add extensions, second phone numbers, or international numbers.

Total Control also provides spreadsheet-like formulas you can include in your database fields — date calculations, including days between dates, logic commands such as @IF, and numeric functions such as @SUM and @AVG. This feature alone is worth the price of admission — how many times have you wished you could perform calculations in a database field? The latest version of the program (2.0) even includes automatic recalculation as soon as you enter data.


Total Control also adds a calculator, which unfortunately works like AppleWorks' spreadsheet module — from left to right, with no priority of multiplication and division over addition and subtraction. For example, "5 + 3 * 5" yields 40 as the result instead of 20. You must remember to use parentheses to control the order in which AppleWorks performs calculations: "5 + (3 * 5)" yields the expected result of 20. Mathematics drop-outs may consider this lack of regard for

operational precedence a blessing, but those of you who learned under hyperactive arithmetic instructors should take extra care when running calculations.

Two of Total Control's most sophisticated capabilities are its glossary and word-processing commands. The glossary command is a lookup table: Type in a short abbreviation and Total Control will automatically input the complete entry for you. The word-processor window connects your database file to a modified AppleWorks word-processing file. You can attach fields from each record in your database to the word processor. Instead of AppleWorks' 79 characters-per-field limit, the Total Control word-processor window expands each field up to 2000 lines — handy for comments and descriptions.

Total Control's interface takes a while to get used to, especially without Beagle Bros' UltraMacros. But if you're doing any serious work with the AppleWorks database module, you should pick up this gem (pun intended) of a patch program. Randy Brandt and Dan Verkade have been doing high-quality work ever since their Beagle Bros salad days. Judging from their latest opus, they haven't missed a step.

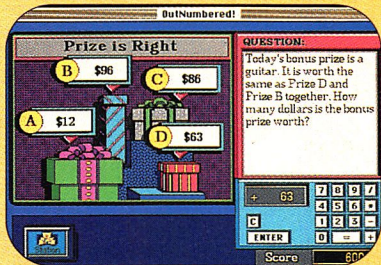
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I did it, I did it! I captured the Master of Mischief! Of course, it took four tries and I'm still only at junior level, but still . . . Maybe I should start at the beginning.

Super Solvers Outnumbered, from The Learning Company, teaches basic math skills — addition, subtraction, multiplication, and division — to children aged 7 to 14. With its intriguing Nintendo-style format, it's so challenging that kids are likely to "play" for hours, without even realizing they're honing not only their math abilities, but other important skills, as well.

The general premise is simple: The Master of Mischief has taken over SGTV, Shady Glen's TV station. It's your job, as a member of the Super Solvers Club, to hunt through the station, finding and solving the math challenges hidden in various rooms. Solving these math problems earns you clues to the Master's hideout. There's a time limit, though: You enter the station at 9 p.m. and must collect all your clues and solve the puzzle by midnight.

Several obstacles are thrown in your way. First, the Master has two helpers guarding the station: Telly the robot and LiveWire the electric cord. Fighting off (or succumbing to) these creatures' attacks can rob you of precious minutes you need for your hunt.

Naturally, you can protect yourself. One way is by pressing certain keys or pointing the mouse to flip over Telly and LiveWire. (That's not as easy as it sounds; if your timing's not right you can land on top of your foes.) Besides, you don't want to avoid Telly totally. He carries pictures you'll want to match against the room clues you've collected so that you can decipher the secret code that tells you where the Master's hiding. To get Telly's code pieces, you have to zap him (of course you carry your own zapper) and solve the math problems that appear on his screen.

On the other hand, you don't want to do too much zapping; you also get bonus points for the amount of energy left in your zapper at game's end. That means you also have to keep an eye on the energy meter at the bottom of the screen. And while you're doing all this flipping, calculating, and zapping, the clock keeps running. You can stop the clock by using

your "decoder" to analyze the pictures formed by the room clues against Telly's code pieces. The higher your skill level, the more complicated it is to decipher the codes and clues.

It's a great game — but even more important, it's also a great educational program, for several reasons. First, this isn't a "static" product — that is, you don't know all the answers after playing it once or twice. There are too many variations: You won't always find clues in the same places, and there's no telling exactly when or where Telly will appear. Most important of all, you can set the program at different skill levels, so that it grows along with the child.

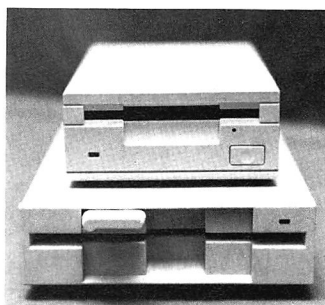
Even the math problems come in several formats. Some are simple questions, such as "12 - 0 = ?" Others are in sentence format, requiring the youngster to translate the words into numerical formulas first. Other problems add still another dimension — testing the player's skill in reading charts and graphs. For instance, one graph shows the number of cartoons SGT V showed each day of the week. The player has to be able to read the graph to figure out how many more cartoons were shown on Monday than Friday.

This program teaches more than just math skills, though. Learning to match the patterns of the various clue pieces teaches shape recognition, too. Analyzing whether to zap Telly or jump over him enhances analytical skills and strategic abilities. Deciphering clues hones deductive reasoning.

Finally, a special compliment regarding the documentation: It's clear, concise, and easy to follow, rare traits in the world of software manuals. Working with this one, 14- and maybe even 10-year-olds should be able to get into the program on their own and learn the game fairly easily. For younger children, however, it's probably best if parents work with them the first few times they play the game, or until they feel comfortable on their own.

All in all, it seems as though Super Solvers Outnumbered upholds The Learning Company's reputation for quality educational software. One caveat: Be prepared to lose your child for hours. □

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Before we begin, let's emphasize one point about our tactics. *Self-defense* may (erroneously) imply coming at a problem with a combative or confrontational attitude — unleashing your anger on a company that deserves your wrath. We don't mean to mislead you. Whether you're trying to obtain service, a refund, or just information, if you're unpleasant or unreasonable, you'll get nowhere fast.

Most mail-order companies have written warranty policies, and their responsibility to you stops there (for the most part). If you have a genuine problem or request, most companies will do their best to keep you happy — not because they have any legal obligation to you, but because they want to keep you as a customer. Remember as you head into the mail-order arena: Your iron self-control is your best friend.

Now for the nitty-gritty. A couple of thousand years ago, the notorious Roman consumer advocate Ralphius Naderius coined the now-famous phrase *caveat emptor* — "let the buyer beware." Great philosophers have affirmed this wisdom with sayings such as "A fool and his money are soon parted," and "Never give a sucker an even break." A much-respected American sage, P.T. Barnum, once said, "There's a sucker born every minute." These wise words from the ages can be distilled and applied to our current situation: If you go into a purchase with your eyes closed and no information, bring an extra wool coat,

because you're going to get fleeced. So what can you do to minimize that possibility — even before you place your order?

- **Know exactly what you want.** If you're even a little unsure, talk to a friend, read magazine reviews, find a user group, call a local dealer, contact the manufacturer, or even call the mail-order company. Don't buy anything unless you understand clearly what it is, what it does, and whether it will work on your particular machine.

- **To make sure you understand what you've just been told, try explaining it to someone else.** If that person gets the idea, then you're usually on the beam and in the green.

- **Ask about what happens after the sale.** What exactly are the company's warranty and return policies? For instance, some businesses won't accept software returns. Will the mail-order distributor provide technical support and repairs or will you have to contact the manufacturer?

- **Even if the distributor's sales reps swear up and down they've got you covered, call the manufacturer and ask about direct tech support anyway.** Some tech-support departments have 900 numbers, so you may end up paying \$20 for ten minutes on the telephone. In short, get as much information as possible about the product, the manufacturer, and the mail-order company.

Most MOBs are honest and are anxious to "make it right," but long distances can turn even minor problems into months-long delays and major headaches. Therefore, the first rule of dealing with MOBs is "Don't give them a chance to do unto you." Here are some tips for protecting yourself as you order your equipment:

- **Keep records of your transactions.** Write down the date and time of every call you make to the distributor, including when you place your original order. Telephone bills can help corroborate your claims, but remember that calls to toll-free numbers don't show up on your bill.

• **Get the name of every operator who takes your order or listens to your problem.** You might even ask to speak to the same person every time you call.

• **Most distributors will give you a confirmation number when you order — write it down.** If you're missing some merchandise, you'll have to prove that you placed an order and that it wasn't delivered.

• **Order by credit card or C.O.D.** This is the cardinal rule for exploring the mail-order jungle. With a credit card, if something goes awry in delivery *and you can prove it*, you're no longer a lone consumer confronting the faceless behemoth. Credit-card companies have large-caliber guns and enormous resources, and they handle this sort of thing all the time. If you follow the C.O.D. route, even better — you don't pay until you get the goods.

• **Proving that you didn't get what you paid for can be tricky, but if you're feeling paranoid, shipping records can increase your chances of getting your money back.** Most MOBs will use overnight or second-day express shipping for a small fee; such packages are watched carefully and are easy to trace.

• **If the distributor doesn't have what you want in stock, don't place your order, unless you've worked with the company several times before and you're prepared to trust it with your money.** Most MOBs charge your credit card immediately whether they've shipped your order or not. Ask when the product is expected, and call back if it doesn't arrive. If you think the distributor is giving you the run-around, call the manufacturer's customer-service personnel and ask whether there's a production problem or delay and when they expect it to be resolved.

When you get your new SCSI-o-Matic next month, we'll talk about basic techniques for solving technical problems, how to get the most out of a tech-support call if you have to make one, and how to handle uncooperative companies. □

— **Cameron Crotty**
inCider/A+ staff

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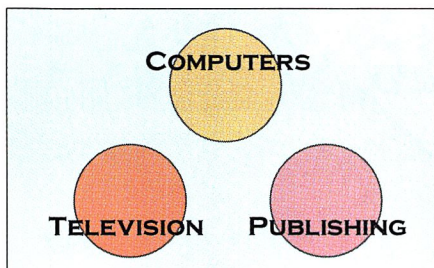


Figure 1. The view from the '60s.

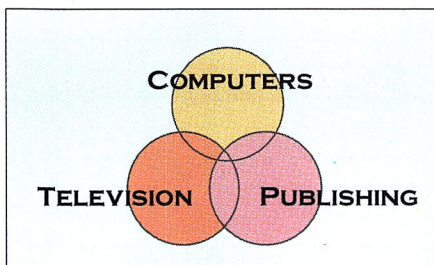


Figure 2. Enter the '90s.

going to merge in the near future, how do today's machines stack up? The Apple IIGS wins hands down. Because it supports color video adapted to the United States (NTSC) standard, the GS connects easily to a VCR. Reports created in HyperStudio can be recorded at school for home viewing or teacher archives, just by pressing a couple of buttons on a device most of us use almost every day.

Where's the vaunted Mac in all this? We all agree that the Mac is a perfect tool for producing printed documents. The Mac virtually defined desktop publishing, and for good reason: its WYSIWYG (what you see is what you get) interface. Macs and laser printers are a magic combination.

But as a tool for video publication, the Mac has a serious design flaw — its video-output options. The only Apple products that support NTSC video (without additional equipment) are in the Apple II line. Mac models either offer no external video connection at all, or provide analog RGB (red/green/blue) signals that can be displayed only on expensive monitors. It's true that the NTSC video standard can't display high-resolution images clearly, but, in addition to an RGB output signal for a special monitor, Apple could have also provided a standard signal that, imperfections and all, would let you display the computer image on an NTSC monitor and record to a VCR without extra hardware. To do so, you need a third-party

NTSC-output card or adapter costing at least several hundred dollars. Describing the plight of the Mac (and most MS-DOS computers) in the near future, our drawing would look like **Figure 4**.

Another up-and-coming form of computer-based publishing is the desktop presentation. Surprised? Don't be a victim of "paradigm paralysis": Where is it written that presentations should be done only with slides and transparencies? This nifty relic of '50s thinking may comfort those who yearn for more *Ozzie and Harriet* reruns, but the rest of us are ready to enter the '90s with both feet. If the computer can let us design slides, why can't it be the primary presentation tool?

In fact, it can be. I haven't given a presentation with traditional slides since the early '80s, and I haven't used a transparency in five years. I give about 100 presentations a year throughout the United States and Canada, and every one is completely computer based. My reason is simple: The computer is the most convenient presentation tool I know of.

If I find that my talk is listed under a different title from the one I expected, for example, a minute during my setup time is all I need to create a new title screen. I can use progressive reveals, and other special effects impossible with overhead transparencies. My IIC, disks, and LCD plate (a flat-panel transparent display that sits on top of a standard overhead projector and connects to your computer's video output) are a lot easier to carry on tour than 30 slide trays.

Again, the Mac's video-output idiosyncrasies make it less than ideal here, as well. NTSC output means that you can dispense with the LCD plate and simply hook your Apple II to a large-screen TV for classroom or auditorium viewing if such a monitor is available. If you go with a Mac, you're limited to highly specialized LCD projection plates costing at least a couple of thousand dollars if you want color. Industrial-training sites may have such high-resolution multisync projectors available, but school classrooms don't.

Those of you who are connecting your Apple IIs to your VCRs are riding the wave of the emerging paradigm; you're part of the integrated future. But if you think "phono jacks" is a game you play with a ball and small metal pieces while listening

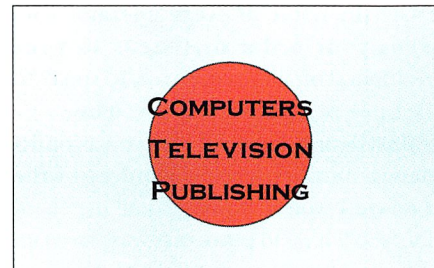


Figure 3. Media merge in the year 2000.

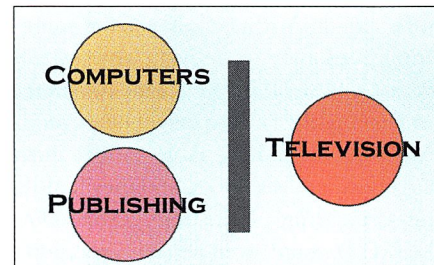


Figure 4. Today's Macs: stranded in time.

to the latest Sting record, call the tech-support folks at Roger Wagner Publishing (619-442-0522) and ask for help. They'll send you a flier showing how to connect your computer to any VCR.

While your computer-graphics images or HyperStudio stacks are playing, record your voice on the audio track. How does it feel to work in this new medium? After a while, you may just find the VCR moving to your printer stand. □

WRITE TO DAVID THORNBURG AT THE THORNBURG CENTER FOR PROFESSIONAL DEVELOPMENT, 1561 LAUREL, SUITE A, SAN CARLOS, CA 94070.

FURTHER READING

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May 1989, p. 42

"Reel-World Images"

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"The Medium Is the Message"

August 1989, p. 60

"A Fish Called Herman"

April 1990, p. 51

"Making Movies with Your Apple II"

April 1990, p. 44/May 1990, p. 45

"The Apple IIGs: What the Mac LC Should Have Been?"

Letters, February 1991, p. 13

"Forever Amber"

What's New, February 1991, p. 19

"True Colors"

What's New, September 1991, p. 14

MTV COMES HOME

Is Apple abandoning the GS, and with it its share of the future?

Like a fast-moving train, the future's coming our way no matter what. What does that mean for us as parents and educators as we try to make the most of the technological changes that future will bring? For one thing, our communications media are merging: Computer software and video are now supplementing traditional print-based information. And, according to the Canadian educational consultant Ted McCain, that's just one intermediate

phase on the way to a com-



By **DAVID D. THORNBURG, Ph.D.**

pletely integrated future. Let's look more closely at this development. In 1967, let's say, the worlds of computers, publishing, and television didn't overlap at all (**Figure 1**). Computers were just number-crunching devices, and text editors served the needs of programmers only. Ten years later, using computers for writing was still so rare that the new Apple II didn't even support lowercase characters. Today, it's a whole new world. The overlap among TV, computers, and publishing has begun in earnest and heralds radical changes in communication to come. From today's perspective, our drawing would look like **Figure 2**.

Old-line publishers may have been taken completely by surprise when computerized "desktop publishing" hit the scene, but there's no doubt that the flurry of self-published books and newsletters has had a significant impact. Then, too, television overlaps publishing in a number of ways, especially in the dramatization of works of literature and popular novels, and in the creation of printed books to supplement major series, such as PBS' *The Power of Myth*, created by the broadcast journalist Bill Moyers and the teacher and mythographer Joseph Campbell.

Computers and television will continue to overlap more and more as special computer-generated graphics and sound effects become easier to implement. They're everywhere today — from play diagrams during sports broadcasts to depictions of weather patterns for TV news to action-adventure animation on Saturday-morning kids' shows. The technology needed to create the first 30 seconds of the introduction to the TV show *Jeopardy* used to occupy an entire room. Now it can be created on a desktop computer using tools such as NewTek's Video Toaster. Home-video hobbyists are hooking up their Apple IIs to VCRs and using simple graphics programs to design titles; even combining text and drawings directly on video frames (known as *genlock* technology) is a snap, thanks to the Apple II Video Overlay Card.

Ted McCain predicts the complete merger of these three fields into one by the end of the century (**Figure 3**). The trend is obvious. Look at products such as Commodore's CDTV, or Phillips' CD-I (*compact disc interactive*): These technologies extend the television metaphor to provide access to computer activities, and promote the publication of works on CD-ROM.

Closer to home, multimedia will change forever the way we communicate. Responding last year to an *inCider/A+* feature covering the introduction of the Mac LC, Roger Wagner, president of Roger Wagner Publishing and creator of HyperStudio, described the VCR as the printer of the '90s. In terms of the future of "publishing," one of the more important features of a VCR is that in addition to playing tapes back, it can record. This facility places a means of "printing" in the hands of everyone with a VCR (74 percent of U.S. households, according to the Electronic Industries Association), assuming he or she has a video/audio source to connect to the recorder. If we believe that multimedia reports are going to become as common as typed reports were when you and I went to school, then the VCR tape is the only cost-effective delivery medium currently available.

Now, here's an interesting question. If publishing, computers, and television are

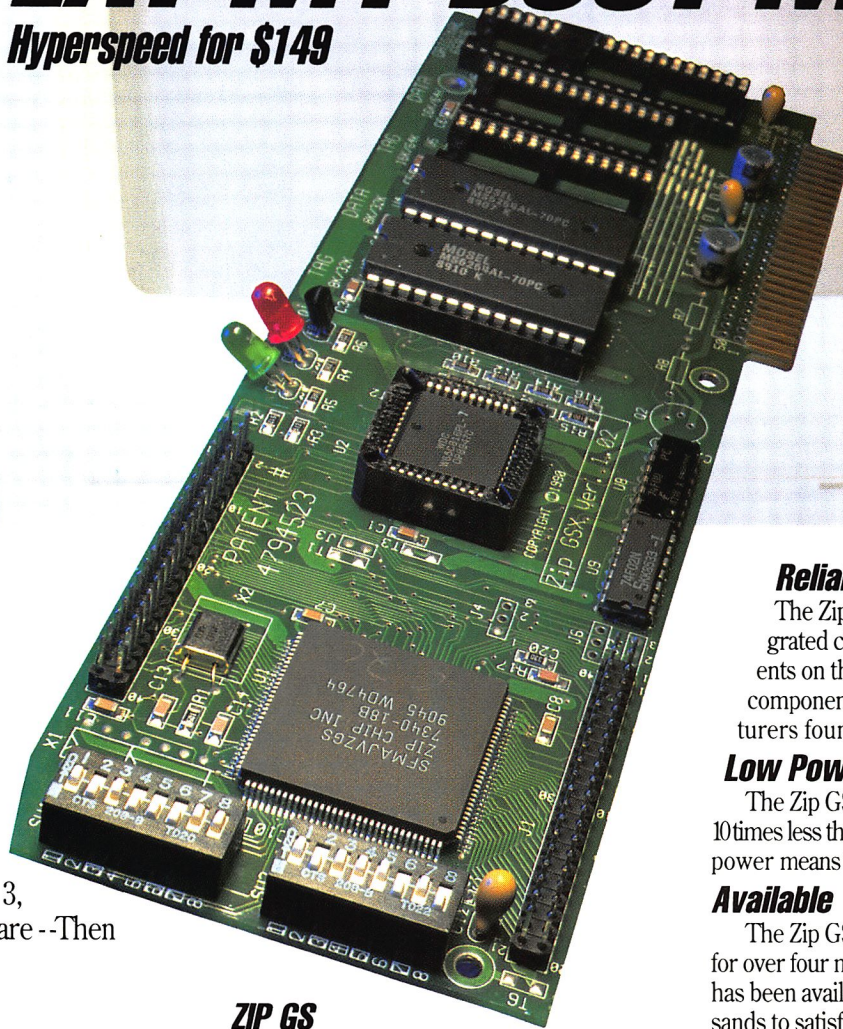
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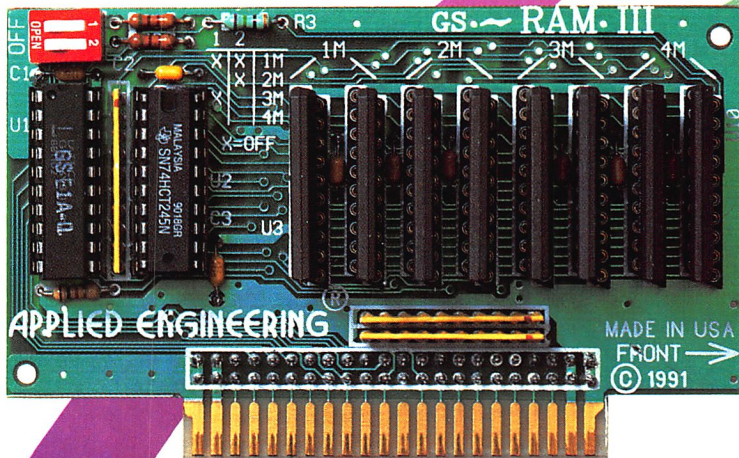
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